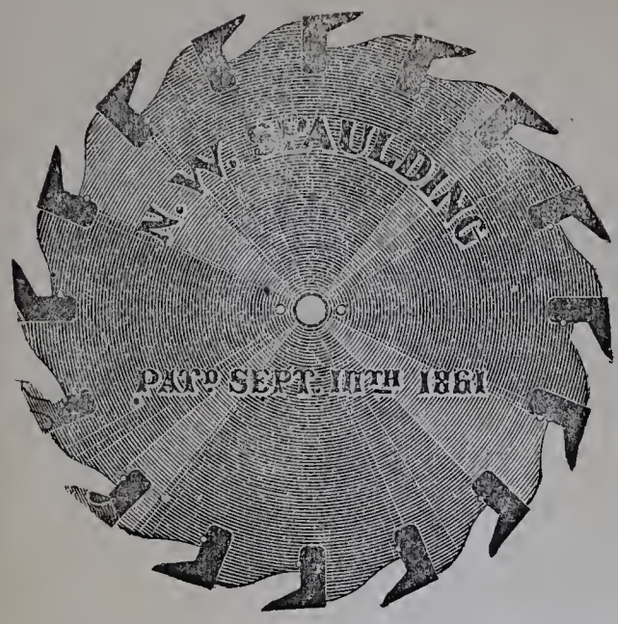
REPORT OF THE

Eighth Industrial Exhibition

MECHANICS' INSTITUTE.

1871.

PRESENTED BY THE SOCIETY.



N. W. SPAULDING,

Saw Smithing & Repairing

ESTABLISHMENT,

17 & 19 Fremont Street,

NEAR MARKET,

San Francisco, Cal.

MANUFACTURER OF

Spaulding's Inserted Tooth Circular Saws

They have proved to be the cheapest, most durable and economical saw in the world.

ALL SAWS SOLD OR WORK DONE, WARRANTED.

VAN VLECK

C. P. Sheffield. N. W. Spaulding.
J. Patterson.

PACIFIC SAW Manufacturing Co.

17 & 19 FREMONT ST.,

San Francisco,

SAW MANDRELS, PLANING KNIVES,

REAPING AND MOWING ACTIONS,

— AND —

SAWS OF EVERY DESCRIPTION

ON HAND AND MADE TO ORDER.

☞ **Repairing of all kinds done at short notice.** ☜

REPORT

OF THE

Eighth Industrial Exhibition

OF THE

MECHANICS' INSTITUTE,

OF THE

CITY OF SAN FRANCISCO,

HELD AT THE

Pavilion of the Institute, Union Square, from the 8th day of August to the 7th day of September, 1871.

SAN FRANCISCO:

PRINTED BY THE COSMOPOLITAN PRINTING COMPANY, 505 CLAY STREET.

1872.

THE

MECHANICS' INSTITUTE,

ORGANIZED MARCH 29, 1855.

Incorporated December 6th, 1869.

BUILDING OF THE ASSOCIATION, No. 27 POST ST.

LIBRARY HOURS, 8 A. M. TO 10 P. M.

Terms of Membership:

Initiation Fee, on entering,	$1.00
Quarterly Dues, in advance,	1.50
Life Membership,	50.00

(Entitling the person to all the privileges of Membership.)

Officers,—1871.

A. S. HALLIDIE, President.

B. P. BRUNNER, Vice-President.

H. L. DAVIS, Treasurer.

W. H. WILLIAMS, Recording Secretary.

H. W. JONES, Corresponding Secretary.

Trustees.

GEO. SPAULDING,	THOMAS NELSON,	CHAS. E. HOPPS,
DAVID KERR,	JOHN O. HANSCOM,	JOS. R. WILCOX,
IRVING M. SCOTT,	JACOB MARTENSTEIN,	CHAS. F. BASSETT.

TABLE OF CONTENTS.

PAGE.

Alphabetical List of Exhibitors 141–147
Articles too Late for Competition 136–138
Board of Managers' Report 5–7
Classification of Exhibits 17–21
Essay on the Manufacturing Interests of California 149–197
" the Transportation of Ores 197–204
" Clearing and Cultivating Tide Lands 205–208
" The Culture of Cotton 209–214
" The History of Grass Cloth 215–220
" Pearls and Pearl Making 221–237
" The Tallow Tree and its Uses 229–231
" Chinese and Aztec Plumagery 235–238
" Insect Wax 233–234
Introductory Address, by A. S. Hallidie 23–26
List of Awards 32–42
Number of Exhibitors and Articles Exhibited 139
Opening Address, by Milton S. Latham 26–32
Opening Exercises 23
Premiums 21–23

REPORT ON—

Agricultural Implements 66–69
Animal Products 50–52
Book Binding, Stationery, etc 117
Carriages and Wagons 87–89
Cash Premiums 148
Casks, Wood and Willow Ware 84–85
Cast and Wrought Iron Work, etc 78–80
Chemical and Pharmaceutical Products 133–135
Civil Engineering and Architecture 99–100
Dental and Surgical Instruments, etc 73
Drawings from the Public Day Schools 105–107
" " Evening Schools 107–108
Exhibits of Apprentices 108
Fermented, Cereal and Vinous Products 132–133
Furniture 85–87
Gas Machines, Fire Extinguishers, Roasting Furnaces, etc 126–128
Glass, Earthen Ware and Pottery 89–90
Gold and Silver Ware, etc 110

PAGE.

REPORT ON—
Leather, Rubber, etc. 90–91
Lithography, Photography, Engraving, etc. 111–112
Locksmith Work, Cutlery, etc. 81
Machines for Transmitting Power. 56–57
Manufactures from Hemp, Manila, Flax and Ramie. 93
Manufactures from Wool, Cotton, Silk and Furs. 91–92
Metal Working, Tools and Products. 64
Military Engineering and Architecture. 98–99
Milinery, Dress Making and Needle-work. 120–125
Mineral Productions. 47–48
Mining Machinery, Quartz Mills, Pumps, etc. 59-64
Musical Instruments. 119–120
Naval Architecture and Engineering. 96–97
Painting in Oil and Water Colors. 101–105
Printing, etc. 116
Sculpture, Statuary, Carving, etc. 108–109
Sewing Machines, Washing Machines, etc. 71
Sign Painting, Graining, etc. 118
Sparkling and Still Wines, Liquors. 130–132
Steam Boilers, etc. 53–54
Steam Engine, etc. 54–56
Steam Ploughs, Agricultural Engines, etc. 69–70
Telegraphic and Optical Instruments, etc. 72
Turning, Scroll Sawing, Boxes, Frames, etc. 83–84
Upholstery, Paper Hanging and Decorations. 93–95
Vegetable Products. 48–49
Wax Work, Hair Work, etc. 112–115
Wire Goods. 135–136
Wood Working Tools and Machinery. 65
Rules and Regulations. 16–17

TREASURER'S REPORT. 8–15
Carnival Ball. 14–15
Pavilion Account. 15
Receipts and Disbursements. 10
Receipts at the Door. 8
Ticket Account. 9

REPORT OF THE BOARD OF MANAGERS

OF THE

EIGHTH INDUSTRIAL EXHIBITION

OF THE

MECHANICS' INSTITUTE, 1871.

To the Board of Trustees of the Mechanics' Institute:

GENTLEMEN—

The Eighth Industrial Exhibition of the Mechanics' Institute having been brought to a successful termination, the Board of Managers thereof present their report.

In accordance with the original announcement, the Exhibition was opened to the public on Tuesday, 8th August, 1871, at 11 A.M.—the dedicatory address being delivered by the Hon. Milton S. Latham.

The building had been materially enlarged, and, in order to accommodate the various exhibitors, it was found necessary to extend the building to the limit of the available ground area—thus covering Union Square, with the exception of about 30 feet on Stockton street, and being 375 feet by 382 feet on the ground floor.

Arrangements had been entered into with the Bay District Horticultural Society, for that Society to hold its first Flower-show in a building to be erected by the Managers, who agreed to pay it the sum of $1,000 towards the expenses connected therewith, and to supply the building with gas and water free of charge, thus relieving the Managers of the Horticultural Department, and giving an opportunity for this young Society to present itself to the public.

The Horticultural Exhibition occupied a space on the south side of the building 46 by 380 feet, and was an agreeable feature in the Fair, being a source of attraction and a credit to the Bay District Horticultural Society.

Subsequently, finding that their expenses ran ahead of their receipts, the Managers donated one day's receipts, which amounted to $1,205.

The preceding Board of Managers had been exceedingly diligent and judicious in its preparations for this Exhibition, and nearly all the preliminary work fell on their shoulders; and they, with an eye singular for the needs of this Exhibition, the best interests of the Mechanics' Institute, and the developments of the commerce of this State, had anticipated all the needful details in that connection.

Circulars had been sent to every available point; and particularly to that progressive and developing nation, Japan were inducements offered.

A gentleman long connected with your Society, (Mr. Horace D. Dunn), whose business was about to take him to Japan, and probably to China, offered to take charge of the interest of the Industrial Exhibition and represent

it there while he remained; and arrangements were made between him and the preceding Board to that effect, the remuneration being $300, as suggested by him. The mission was successful, and the Japanese Government sent several Commissioners to visit the Industrial Exhibition and the United States, and report thereon. This result, although perhaps of no pecuniary advantage to the Industrial Exhibition, has, we believe, been of immeasurable benefit to the people of the United States, and more particularly of California.

The gentlemen who composed the Commission from Japan—being liberal, appreciative and courteous, keen observers, quick to comprehend, free from offensive conceit, highly educated absorbents of our best ideas—found meat for their appetite which seemed suited to their digestion. And we believe that your Society may justly claim the honor of developing these friendly offices, which will undoubtedly cement good feeling between the two nations and result in a healthy commerce.

To the U. S. Minister to Japan, Hon. Chas. De Long, we are under deep obligations for his friendly aid, as well as to the Consul of Japan, Chas. Wolcott Brooks, Esq., both of whom have been unremitting in their efforts to bring about these good results.

The Pacific Mail Steamship Company liberally brought over all freight destined for the Exhibition free, and reduced the first cabin fare one-half, in order to enable the Japanese to visit the Exhibition.

The Managers caused to be erected a room 205 feet by 21 feet, for the Japanese Exhibit. This room was specially fitted up with show-cases, etc., and was in charge of a special force to protect the interest of the United States Government (the goods being in bond) and all concerned.

The Expenditures in this department reached nearly $3,000, and the Exhibition was at once unique and attractive.

The preceding Board had offered various sums, varying from $50 to $400, payable in cash, for reports on matters of great public interest, a catalogue of which has already been laid before you. Of the reports submitted, the following were awarded premiums:

"On the Manufacturing Interest of California, its Present Condition and Future Prospects," by Wm. Gouverneur Morris and H. C. Bennett.

"For the Best Method of Cultivating and Clearing Tule Lands," by A. J. Bigelow.

"Best System for Economical Transportation of Ores, Minerals and Goods, over Mountainous Places and Difficult Roads," by David R. Smith.

"Best and Most Successful Attempt to Raise Merchantable Cotton in the State of California, with report on same," by Solomon W. Jewett.

"On Insect Wax, China Grass, Tallow Tree, &c.," by Dr. Macgowan, of China.

To the foregoing reports, published in full in the general report of the Exhibition, we beg to draw your attention.

Inducements were held to the pupils of the Public Schools to exhibit samples of drawing, and the response was quite large and flattering to the pupils. About five hundred drawings were exhibited, and the juvenile authors drew many well-deserved premiums for their efforts.

The Public Evening Drawing Schools were offered liberal prizes, and the award of the various premiums to these schools has, it is believed, given a healthy impetus to the study of architectural and mechanical drawing, and kindred subjects.

Some time previous to the opening of the Exhibition the Board placed at the disposal of the various charitable associations, fitted up and free of all charge, space in the gallery for the purpose of enabling them to sell fancy articles and raise funds in aid of their several charities, and in lieu of the days usually set apart for their benefit. Only two—viz., St. Alban's Church and the Seamen's Friend Association—accepted, both of which realized a fair return for their trouble and time.

During the whole term of the Fair there was nothing to lessen the interest felt. In view of the great financial depression and the fact of the general and gubernatorial election coming off during the continuance of the Fair, the Board looked for a serious falling off in the attendance, and consequently in

the financial result. This expectation was not realized; the attendance was remarkably good. An exact count having been taken on Saturday, Aug. 19th, —11 days after opening—it was found that 21,756 persons passed in the building during that day; and as it may be a matter of interest to know the number, at different intervals of time, there were 2,500 from 10 to 12 M.

3,000 from 12 to 2 P. M.
5,800 from 2 to 4 P. M.
800 from 4 to 5:30 P. M.
8,756 from 7 to 9 P. M.
900 from 9 to 10 P. M.

The number of exhibitors far exceeded that of any previous Exhibition, and the character of the exhibits was more varied, and showed a marked advance in the industries of the City especially. The relative number of exhibitors at the past Fairs were as follows:

Years.....	1857.	1858.	1864.	1865.	1868.	1869.	1871.
Exhibitors...	650	575	717	585	748	826	1,020

From the foregoing table, it will be seen that the last Exhibition by far exceeded in extent any previous one, and consequently greater provision had to be made for the accommodation of exhibitors, entailing necessarily considerable outlay beyond what was originally intended, but at same time showing a result in the high character of the Exhibition equally beyond anticipation, and exceedingly gratifying to those who have the best interest of the State at heart.

The building was opened to the public on the 8th of August and remained open until Saturday, September 9th, being 29 days in all. The total receipts were $62,846, and total expenditures $30,991 91, leaving a net gain during the season of $31,854 09. The financial statement will be seen in detail by referring to the Treasurer's Report, herewith appended.

In the matter of awarding premiums, the Managers are of the opinion that the true policy is for the Society to award no premiums of any kind. Let the verdict of the public stand as final judgment. Exhibitors place their articles on exhibition for the purpose of submitting them to the public for its judgment, and it very seldom errs. The leading Societies of the older States, among which are the American Institute and the Maryland Institute, are finding this to be the true policy, and more in accordance with the spirit of the age. The utmost the Managers would recommend to their successors would be to appoint Committees of examination only on request of a worthy exhibit, a copy of their report to be presented to the exhibitor.

The Managers suggest that some means be taken to obtain a permanent Exhibition Building; but they would not advise impairing the pecuniary status of the Society or its property. This should be held sacred. Too much hard work has been done, too many anxious days and years spent in trying to clear off the incubus of a debt, to ever think of involving the Society in any further pecuniary liability.

It will therefore necessarily be some years before you can hold another Industrial Exhibition. Meantime, many of your tried officers can be relieved of anxiety as to the immediate wants of the Society, and can gain strength for your next great victory, which will ever be in the cause of progress and public good, going forth like a young giant with unsullied honor and untarnished fame.

The Pavilion, in which so many pleasant days have been spent by the people of San Francisco, is a thing of the past; it has done much good during its day. Its doors were always open without charge to aid benevolences and charities.

The sale of the building and fixtures realized about $6,800.

The Managers have appropriated in all, during the past term, $20,438 16 *directly* to creditors of the Mechanics' Institute in liquidation of its debts. This was found necessary, as, under the Constitution, 10 per cent. of the total receipts by the Institute were required to be set aside in the sinking fund.

We now beg to draw your attention to the Treasurer's Report of Receipts and Disbursements, in detail, from all sources:

MECHANICS' INSTITUTE,
SAN FRANCISCO, November 29, 1871.

To the President and Board of Managers of the Eighth Industrial Exhibition, 1871.

GENTLEMEN: I herewith submit my report of the receipts and disbursements on account of the Eighth Industrial Exhibition, 1871. Also a Ticket Report, showing each class and by whom sold.

In addition to the amount of disbursements there will be bills payable for compiling and printing the Reports of the Exhibition, for restoring Union Square to the condition in which the Board of Managers received it, and miscellaneous, estimated from $1,200 to $1,500.

Yours respectfully,

HENRY L. DAVIS, Treasurer.

EIGHTH INDUSTRIAL EXHIBITION.

DAILY RECEIPTS AT THE DOOR.

1871.	DOUBLE SEASON TICKETS.	SINGLE SEASON TICKETS.	CHILD'NS SEASON TICKETS.	ADULT SINGLE TICKETS	CHILDREN'S SINGLE TICKETS.	TOTAL.
August 8...	946	300	157	584	51	$6,170 25
" 9...	491	142	91	640	67	3,354 25
" 10. .	455	160	88	805	94	3,313 00
" 11...	376	105	72	912	97	2,783 25
" 12...	554	151	87	2,269	501	4,613 25
" 14..	300	115	49	1,509	132	2,706 00
" 15...	211	49	24	1,900	204	2,239 00
" 16...	138	54	15	1,825	175	1,830 75
" 17 ..	125	31	22	2,087	166	1,836 00
" 18...	78	22	10	1,619	144	1,316 50
" 19...	105	26	19	3,443	1,017	2,607 25
" 21...	54	11	11	1,704	145	1,207 75
" 22...	40	2	4	1,791	128	1,139 50
" 23...	30	10	2	1,773	152	1,107 50
" 24...	24	7	....	1,992	184	1,183 00
" 25...	21	6	...	1,702	171	1,016 75
" 26...	13	5	5	3,167	863	1,886 75
" 28...	9	8	3	1,660	170	946 00
" 29...	5	3	1	1,336	137	737 75
" 30...	7	....	....	1,601	155	874 25
" 31...	2	2	1	1,459	142	782 50
September 1...	2	2	1	1,280	123	688 25
" 2...	2	....	1	2,140	570	1,224 00
" 4...	1	1	....	1,045	89	552 75
" 5...	....	....	....	1,137	132	601 50
" 6...	....	1	....	1,149	110	605 00
" 7...	....	....	....	1,723	196	910 50
" 8...	....	....	....	1,923	257	1,025 75
" 9...	....	....	....	3,034	550	1,654 50
TOTALS.....	3,989	1,213	663	49,209	6,922	$50,913 50

ACCOUNT OF TICKETS SOLD, AND BY WHOM.

NAMES.	DOUBLE SEASON.	SINGLE SEASON.	CHILD'N'S SEASON.	ADULT SINGLE.	CHILD'N'S SINGLE.	AMOUNT.
J. G. Goldsmith, Cl'k	3,989	1,213	663	49,209	6,922	$50,913 50
G. C. Hurlbut	201	55	32	....	....	1,218 00
G. P. Coleman	109	11	....	....	....	533 00
A. S. Hallidie	12	4	....	....	....	72 00
B. P. Brunner	8	5	....	....	....	55 00
H. L. Davis	19	7	6	....	....	125 00
W. H. Williams	78	26	....	....	....	468 00
H. W. Jones	25	9	....	....	...	152 00
Charles E. Hopps	69	7	....	....	....	366 00
George Spaulding	45	14	....	....	....	267 00
J. Martenstein	37	6	....	....	....	203 00
J. O. Hanscom	30	2	....	....	....	156 00
Irving M. Scott	22	6	...	....	....	128 00
C. F. Bassett	19	3	....	....	....	104 00
Thomas Nelson	17	6	....	....	....	103 00
David Kerr	13	2	....	....	....	71 00
J. R. Wilcox	12	2	....	....	....	66 00
Charles S. Eaton	43	11	....	....	....	248 00
Jacob Browning	38	..	....	....	....	190 00
Sherman & Hyde	32	11	....	....	....	193 00
A. Roman & Co	32	8	....	....	....	184 00
Olmstead & Cone	20	4	....	....	....	112 00
D. R. Coleman	17	8	....	....	....	109 00
Kohler, Chase & Co.	13	6	....	....	....	83 00
Painter & Calvert	13	3	....	....	....	74 00
A. L. Bancroft & Co.	11	4	....	....	....	67 00
Snow & Roos	12	..	....	...	....	60 00
M. Gray	4	5	....	....	....	35 00
H. Bruns, Currency.	154	31	....	....	....	863 00
W. T. Reilly "	88	11	3	....	....	477 50
W. J. Dougherty "	43	7	....	....	....	236 00
Commutat'n, schools, etc.	.....	.....	.....	.....	.....	151 75
TOTALS	5,216	1,487	704	49,209	6,922	$58,083 75

RECAPITULATION OF TICKET ACCOUNT.

Double Season Tickets	5,216	$26,080 00
Single Season Tickets	1,487	4,461 00
Children's Season Tickets	704	1,056 00
Adult Single Admission Tickets	49,209	24,604 50
Children's Single Admission Tickets	6,921	1,730 50
Commutation, Schools, etc	.....	151 75
TOTAL		$58,083 75

RECEIPTS AND DISBURSEMENTS.

FITTING AND DECORATING BUILDING.

MATERIAL—Paid to Committee on Papal Celebration, for Lumber	$75 00	
M. Grossman, Glass, etc	47 25	
D. A. Macdonald & Co., Lumber	365 04	
Hanson, Ackerson & Co., Lumber	1,235 22	
Heyneman & Co., Canvas	490 03	
Neville & Co., Sewing-canvas	63 00	
		$2,275 54
IMPROVEMENTS— S. N. Grubb, Gas and Water fixtures	$981 64	
Conlin & Roberts, fixing fountains	74 45	
Conroy & O'Connor, Hose, etc	297 31	
W. T. Garratt & Co., Brass-work	187 62	
J. M. Eckfeldt, Wire Screens	12 13	
Blyth & Son, Battens	1 20	
J. H. O'Brien & Co., Glass Globes	2 00	
Plum, Bell & Co., Matting and Shades	235 39	
Will & Finck, Locks, etc	14 35	
Hinckley & Co., Ironwork	345 02	
G. W. Guion, Hardware	6 15	
		2,157 26
DECORATIONS—A. Crawford & Co., Bunting	$244 08	
L. and M. Sachs & Co., Cambric	46 64	
Murphy, Grant & Co., Cambric	52 31	
Jennings & Garfield, Whitening Walls	85 00	
R. T. Brown, Whitewashing	40 00	
Hopps & Sons, Painting	176 95	
E. K. Howes & Co., Flags, etc	75 45	
L. R. Myers, Use of Fountains	175 00	
Decorating Committee, expense to Vallejo	34 50	
Plum, Bell & Co., Binding	6 00	
		935 93

RUNNING EXPENSES.

EXPENSE—A. L. Bancroft & Co., Wrapping Paper	$8 60	
D. Hicks, Entry Books	5 00	
G. C. Hurlburt, Sundries	287 02	
W. Westgate, "	66 38	
E. K. Howes & Co., Brooms, Pails, etc	20 53	
La Grande Laundry, Washing	15 00	
S. A. Sanderson, Spittoons	12 00	
A. L. Fish, Tube Scraper	3 00	
Conroy & O'Connor, Oils, etc	45 69	
Marsh, Pilsbury & Co., Soapstone	9 00	
F. B. Taylor & Co., Oils, etc	22 85	
Goddard & Co., Wire Cloth, etc	61 98	
Screw Bolt Company, Bolts	1 50	
J. Stott, Fitting Keys	7 25	
California Mills, Trays	9 00	
G. M. Josselyn & Co., Line	7 20	
City Paving Company, Gravel	2 50	
F. Sensupray, Sawdust	7 00	
W. Fleisher, Police Caps	14 00	
H. G. Langley, Directory	5 00	
Armes & Dallam, Pails, etc	6 50	
CARRIED FORWARD	$617 00	$5,368 73

BROUGHT FORWARD	$617 00	$5,368 73
EXPENSE—(CONTINUED.)		
Church & Clark, Giant Crackers	6 00	
Norcross & Co., Letters	65	
B. Pasquale, repairing Flags	23 00	
J. H. Gilmore, Sundries	40 60	
Will & Finck, Loan of Gongs	85 00	
R. Gallardo, Sundries	3 00	
W. K. Vanderslice, Badges	56 00	
C. P. Van Schaack, Combs & Brushes	2 10	
Roester & Proff, repairing Chairs	5 00	
E. P. White, Washing	20 00	
F. Nutz, Painting Signs	80 00	
J. Churchward, Buggy Hire	37 50	
Gas Company, making street connections	74 50	
Currier & Winter, Glass in Picture Frames	3 60	
I. Landsberger, Wines for Committees	14 25	
Chas. Otto, Stamps & Pads	5 00	
G. W. Clark, representation of Gold Yield	24 00	
D. Robinson & Son, Hire of Goldfish	12 50	
J. M. Miller, Hire of Show-cases	130 00	
Pool & Harris, Wharfage, etc	30 00	
F. H. Rosenbaum, Hire of Glass	88 60	
J. H. Culver, Sundries	10 70	
Donation to Policemen	60 00	
Newspaper Subscription	1 85	
W. H. Williams, Sundries	1 50	
Goodwin & Co., Hire of Desks, etc	48 00	
A. S. Perley, Watering Streets	125 00	
M. Grossman, Broken Glass in show-cases	23 50	
J. R. Wilcox, Sundries	25 25	
F. A. Hatch, Cheese, Ham, etc	14 40	
Goddard & Co., Engine Hire	175 00	
H. L. Davis, Petty Cash Items	21 00	
A. S. Hallidie, " " "	35 85	
		1,900 35
LABOR, ETC.—Police, Watchmen, Messengers, Engineers, and Laborers, as per Pay Rolls		7,542 57
SALARIES—Paid Clerks, Canvassers and Agents, including expenses of H. D. Dunn to Japan		3,560 74
GAS—S. F. Gas Company, for Gas		1,773 61
WATER—S. F. Water Works Company, for Water		500 00
MUSIC—Schmidt and Schlott's Band		2,059 17
FUEL—Black Diamond Coal Co., for Coal		358 90
DRAYAGES—Paid Sundry Parties, for Drayages		133 75
PRINTING—Frank Eastman	$49 75	
J. M. Crane & Co	134 00	
C. W. Gordon	21 75	
Cubery & Co	126 85	
E. Bosqui & Co	15 25	
B. F. Conger	1 50	
Spaulding & Barto	129 50	
G. F. Brown & Co	96 50	
B. F. Sterett	15 00	
Waters, Newhoff & Co	31 00	
Mahon, Rapp, Thomas & Co	10 00	
Francis & Valentine	197 50	
Bacon & Co	8 20	
Women's Co-operative Union	21 50	
		858 30
CARRIED FORWARD		$24,056 12

BROUGHT FORWARD		$24,056 12
STATIONERY—Amerman & Howell	$4 80	
A. L. Bancroft & Co	29 66	
Blake, Robbins & Co	10 55	
Gluyas & Dutton	30 22	
Olmsted & Cone	7 18	
		82 41

CONTINGENT EXPENSES.

ADVERTISING—F. McCrellish & Co	$288 50	
San Francisco Bulletin Company	236 75	
San Francisco Chronicle	125 50	
F. Hess & Co	29 00	
Keyt & Co	216 65	
W. S. Moss & Co	125 00	
Golden City	10 00	
Figaro	35 00	
Overland Monthly	20 00	
Sontags Gast	5 00	
La Voce del Popolo	4 00	
E. Andrade & Co	10 00	
La Vox del Nuevo Mundo	10 00	
La Sociedad	5 00	
The Pioneer	8 00	
The Spectator	10 00	
Police Gazette	10 00	
Monitor	10 00	
Federico Biesta	10 00	
Pacific	10 00	
Hebrew Observer	12 00	
L. Aibischer	4 00	
Courrier de San Francisco	20 00	
Commercial Herald and Market Review	8 00	
Abend Post	29 00	
Bean & Co	20 00	
L. P. Fisher, in Pacific Coast Papers	668 00	
Pacific Appeal	4 00	
California Farmer	20 00	
Evangel	5 00	
Evening Journal	10 00	
Dewey & Co	71 00	
Alaska Herald	5 00	
The Hebrew	12 00	
New Age	16 00	
News Letter	30 00	
Daily Morning Call	193 50	
W. B. Lake	8 00	
Masonic Publishing Company	5 00	
Golden Era	10 00	
Plebeian Publishing Company	10 00	
Irish News	10 00	
Elevator	3 00	
		2,351 90
DISCOUNT—On Currency and Silver and Interest		294 10
INSURANCE—Royal Insurance Company	$33 93	
Home Mutual Insurance Company	160 25	
Pacific Insurance Company	30 75	
Ætna Insurance Company	13 90	
People's Insurance Company	92 55	
California Insurance Company	26 50	
		357 88
CARRIED FORWARD		$27,142 41

Brought forward		$27,142 41
Premiums—Hubash & Kutz, Gold and Silver Medals	$850 38	
E. A. Vining, Engraving Medals	173 00	
A. H. Lochbaum & Co., Medal Boxes	74 25	
Britton & Rey, Engraving and Printing Diplomas	483 50	
F. Seregni, Engrossing Diplomas	98 70	
F. J. Butler, " "	28 00	
D. J. Macgowan, Essay	200 00	
H. C. Bennett, "	400 00	
D. R. Smith, "	100 00	
A. J. Bigelow, "	100 00	
S. W. Jewett, "	100 00	
Charles G. Ewing, in part for Drawing Instruments, balance contributed by B. P. Brunner	36 67	
		2,644 50
Cash voted Bay District Horticultural Society	$1,000 00	
Benefit Bay District Horticultural Society	205 00	
		1,205 00
Total		$30,991 91

RECAPITULATION.

RECEIPTS.

Sale of Tickets	$58,083 75	
Privileges	2,742 50	
Sundry Gas Bills from Exhibitors	310 00	
Sundry Advertising Bills, Sale of Pavilion	181 00	
" " " Ball	28 75	
		$61,346 00
From State of California, for Premiums		1,500 00
Total		$62,846 00

DISBURSEMENTS.

Material	$2,275 54	
Improvements	2,157 26	
Decorations	935 93	
Advertising	2,351 90	
Expense	1,900 35	
Labor	7,542 57	
Salaries	3,560 74	
Gas	1,773 61	
Water	500 00	
Music	2,059 17	
Fuel	358 90	
Drayage	133 75	
Printing	858 30	
Stationery	82 41	
Interest and Discount	294 10	
Insurance	357 88	
Premiums	2,644 50	
Bay District Horticultural Society	1,205 00	
		$30,991 91
Net Gain		$31,854 09
Less the amounts to be paid for Compiling and Printing the Reports, restoring Union Square and miscellaneous, estimated from $1,200 to $1,500.		
Carried forward		$31,854 09

BROUGHT FORWARD		$31,854 09
From the above balance of $31,854 09 has been paid for account of Mechanics' Institute, the following amounts:		
Union Insurance Co., on acc't of Note and Mortgage	$17,000 00	
Union Insurance Company, on acc't of Interest	3,059 81	
San Francisco Gas Company, on account of Gas	378 35	
		20,438 16
Leaving balance and transfered to Pavilion Fund of		$11,415 93

The amount of $5,959 19 is not strictly chargeable to the Fair Expenses, but should be charged to the Japanese and Horticultural Departments, as follows:

JAPANESE DEPARTMENT.

For Printing	$29 00	
For Salaries	450 00	
For Decorations	122 34	
For Expenses	123 85	
For Material	976 00	
For Gas	150 00	
For Labor	872 00	
For Insurance	225 00	
For Advertising	25 00	
		$2,973 19

HORTICULTURAL DEPARTMENT.

For Appropriation	$1,000 00	
For Benefit	205 00	
For Decorations	17 00	
For Water	75 00	
For Material	627 00	
For Labor	525 00	
For Insurance	37 00	
For Advertising	200 00	
For Gas	300 00	
		2,986 00
		$5,959 19

CARNIVAL BALL.

To the President and Board of Managers of the Eighth Industridl Exhibition:

GENTLEMEN: I herewith submit my report of the Receipts and Disbursements on account of the Carnival Ball:

RECEIPTS.

Amount received for Sale of Tickets	$3,805 50	
For Supper privilege	450 50	
For Mask privilege	10 00	
For Costume privilege	8 50	
For Flower privilege	4 00	
For Soda privilege	25 00	
For Hat-room	65 25	
	$4,368 25	
CARRIED FORWARD		$4,368 25

Brought forward		$4,368 25

DISBURSEMENTS.

Amount paid for Labor, Construction and Employees	$919 93	
For Decorations	142 10	
For Printing and Advertising	792 05	
For Music	272 00	
For Gas	144 20	
For Loan of Chairs, Lumber, etc	209 39	
For Salary of Ticket Clerk	105 00	
For Prizes	300 00	
For A. A. Hickox Testimonial	25 00	
For Sundries	105 85	
		3,015 52
Leaving balance in Treasury this date, and transferred to Pavilion Fund		$1,352 73

Respectfully submitted,

HENRY L. DAVIS, Treasurer.

San Francisco, November 29, 1871.

PAVILION ACCOUNT.

To the President and Board of Managers of Eighth Industrial Exhibition:

Gentlemen: Herewith I submit my report of the Receipts and Disbursements on account of the Mechanics' Pavilion:

RECEIPTS.

From Sale of Boiler and Fixtures	$1,950 00	
Sale of 1,860 lbs Shafting @ 7 cts	130 20	
Sale of 2,420 lbs Shafting @ 8 cts	193 60	
Sale of Building, on account	1,180 00	
Sale of Chairs, Balls, etc	370 43	
W. N. Hawley, Rent of Pavilion	750 00	
Eighth Industrial Fair, balance transferred	11,415 93	
Carnival Ball, balance transferred	1,352 73	
Total		$17,342 89

DISBURSEMENTS.

Amount paid for Chicago Relief Fund	$1,000 00	
Eighth Industrial Fair, Advertising Bills	181 00	
		1,181 00
Leaving balance in Treasury this date		$16,161 89

San Francisco, November 27, 1871.

Respectfully submitted,

HENRY L. DAVIS, Treasurer.

There is still due from H. P. Herrick, on account of purchase of Pavilion	$1,330 00
From J. K. Prior, on Purchase of Pipe	1,105 00
And from Shafting unsold, estimated	500 00
Total	$2,935 00

From the foregoing, it will be seen that there have been appropriated to creditors of the Mechanics' Institute in all $20,438 16, leaving the balances on hand and due of $19,096 85 now transferred to the Trustees of the Mechanics' Institute and credited to the Pavilion Fund.

The Board of Managers desire to express its deep sense of obligation to Commodore Parrott and officers of the U. S. Naval Department, Mare Island, and to Capt. Scammon, steamer *Wyanda*, for the use of flags used in decorations; to the State and City officials for aid and courtesy; to Wells, Fargo & Co., the Pacific Mail Steamship Company, the Central Pacific Railroad Company; to Messrs. Pool and Harris; to Jonathan Kittredge; to the Officers of the various departments of the U. S. Service, and to the Press of this City, ever foremost in the cause of progress—all of whom so heartily co-operated with your officers in the work of the Industrial Exhibition.

In conclusion, the Board of Managers having completed the work for which it was organized, now ask to be discharged.

A. S. Hallidie,
B. P. Brunner.
Henry L. Davis,
W. H. Williams,
H. W. Jones,
Chas. E. Hopps,
Jos. R. Wilcox,
J. Martenstein,
C. F. Bassett,
George Spaulding,
David Kerr,
Jno. O. Hanscom,
Thos. Nelson,
Irving M. Scott.

November 29, 1871.

RULES AND REGULATIONS

OF THE

EIGHTH INDUSTRIAL EXHIBITION, MECHANICS' INSTITUTE,

SAN FRANCISCO, 1871.

---

1. The Pavilion will be open for the reception of goods on Monday, August 1st. The Exhibition will be open to the public on Tuesday, August 8th, at 11 o'clock, A. M.

2. Applications for space must be made on or before July 15th, stating character of exhibit, amount and kind of space required—wall, table or floor. Blanks will be furnished for this purpose, and a clerk will be in attendance at the Library of the Mechanics' Institute, every day from 12 to 1, and 7 to 10 P. M.

3. All persons presenting articles for exhibition and premiums, must have them registered by the Receiving Clerk, who will give a receipt for the same, which receipt must be presented when the articles are withdrawn, at the close of the Exhibition.

4. The name of every article must be attached by the exhibitor to it, and also a description pointing out its merits, filed with the Board of Managers.

5. Judges will be appointed by the Board of Managers, immediately upon the opening of the Exhibition, to examine all articles presented, in accordance with Article III, and the Managers will award premiums on such articles as the Judges shall declare worthy, which will be delivered as soon as they can be prepared. Due notice will be given of the announcement of premiums.

7. In case of any misunderstanding, application may be made to the Manager of the day, who will at all times be in attendance.

6. The mornings of each day, until 10 o'clock, will be appropriated to the Judges, and no visitors will be admitted during the time thus appropriated, except at the special request of the Judges, or by permission of the Managers.

8. Articles intended for sale will be labeled accordingly, but cannot be removed until the close of the Exhibition, except by written permission of the Managers.

9. Steam power will be provided, so that machinery of all kinds may be seen in actual operation, and every facility possible will be given to exhibit working machinery to the best advantage.

10. Proof of origin must be furnished when required.

11. It is particularly requested that every person who offers a new machine, improvement or invention will file with the Managers a description of its merits, in order that the attention of the Judges may be called thereto.

12. Perishable articles will be received, or may be removed at any time during the Exhibition, with the consent of the Managers.

13. The most effectual means will be taken, through the agency of the Police and otherwise, to guard and protect the property on exhibition; and it will be the purpose of the Managers that all articles shall be returned to the owners without loss or injury. Still, all articles deposited will be at the RISK OF THE OWNERS.

14. Articles intended for exhibition and premiums must be entered and placed on exhibition on or before Saturday, August 12th.

15. The Managers are desirous that articles should be presented early. Those from abroad, intended for exhibition, should be properly packed, and if not consigned to exhibitor's agent, must be marked, "MECHANICS' INSTITUTE, SAN FRANCISCO, CAL." Articles from foreign countries should be accompanied with a certificate from the American Consul, in order that, upon their arrival, the proper course may be taken to have the duties remitted. All articles thus received, arriving too early, will be stored free of cost to the exhibitor, and the Managers will have them duly placed in proper position for exhibition. No freight charges will be paid by the Managers; but exhibitors are notified that arrangements are being made with various transportation companies to repay freight charges on evidence of return of goods exhibited.

Information will be furnished by addressing J. H. GILMORE, SPECIAL AGENT, EIGHTH INDUSTRIAL EXHIBITION, SAN FRANCISCO, CAL.

CLASSIFICATION OF EXHIBITS.

DIVISION I.

RAW MATERIALS.

CLASS 1. MINERAL, including Ores, Rocks, Earths, Salts, Coals, Bitumen, Petroleum, unwrought Metals, Specimens of Minerals, Asphaltum.

CLASS 2. VEGETABLE—Cereals, Specimens of Woods and Vegetable Ivory; Fibres—as Ramie, Cotton, Flax, Hemps, Manila, Lichens for dyeing, Peruvian and other Barks; Products of the Soil, other than classified in Division 9.

CLASS 3. ANIMAL—Hides, Skins and Furs, undressed; Hair, Bone, Horn, Ivory, Wool, Cocoons of Silk Worms, Feathers, Shells, Eggs, Corals, Whalebone, Specimens of Animals.

DIVISION II.

MACHINERY FOR GENERATING, APPLYING AND TRANSMITTING POWER.

CLASS 4. Steam Boilers, Generators and Appurtenances—Superheaters, Gas Generators of Power, Reservoirs for Compressed Air, and Apparatus of all kinds for Generating Power.

CLASS 5. Steam Engines and Appurtenances of all kinds, including Traction, Air and Gas Engines, Water Engines, including Turbines, Water Wheels, Impact Wheels, Tide Wheels, Wind Mills, (For Electric Engines, see Philosophical Instruments.)

CLASS 6. Machines for transmitting power, including Pipes and Tubes; Grip and other Pulleys in combination with Ropes, etc.; Cranes, Hangers, Blocks, and Pulleys, and Horse Powers.

DIVISION III.

MACHINERY AND APPLIANCES EMPLOYED IN MANUFACTURING AND PRODUCING.

CLASS 7. Mining Machinery, Quartz Mills, Arrastras, Amalgamating Pans, Stone Crushers, Quarrying Machines, Boring Machinery, Coal Cutting Machinery, Hoisting Machinery, Ventilating Appliances, Safety Apparatus, Mining Ropes, Mining, Steam and other Pumps; Railways, Tramways and Ropeways; Whims, Machines for Working and Polishing Stone.

CLASS 8. Metal Working—Iron Rolling Machinery, Steam Hammers, Portable Forges, Drawing Dies, Turning Lathes, Shaping and Planing Machines, Screw-Cutting and Gear-Cutting and Nut-Punching Machines; Vises, Tools in use in machine shops, foundries, and other metal working establishments.

CLASS 9. Wood Working—Axes, Saws, Saw Mills, Planing Machines, Mortising, Tenoning, Scroll Sawing and other machines, Turning Lathes—eccentric and other motions—Carpenters', Joiners', and all kinds of Tools used in working wood.

CLASS 10. Sec. A. Agriculture—Plows, Harrows, Seeders, Harvesters, Threshers, Hay Presses, Shelling Machines, Hay Cutters, Cider Mills, Wine Presses, Agricultural Tools and Implements.

Sec. B. Steam Plows, and Cultivators, Agricultural Engines, Sugar Mills, (Beet and Sorghum), Machines for Breaking Flax, Ramie, etc.

CLASS 11. Machinery of various Manufacture, including Sewing Machines, Paper Making, Paper Ruling, Weaving, Spinning, Rope Making, Printing, Stamping, Type Making and Type Setting, and other Machinery and Appliances not previously classified.

CLASS 12. Sec. A. Philosophical, Dental and Surgical Machines and Appliances—Sextants, Quadrants, Surveyors' Instruments, Calculating Machines, Scales, Astronomical Instruments, Electrical Machines, Telegraph Apparatus, Watches, Clocks.

Sec. B. Trusses, Orthopædical and Pharmaceutical Apparatus and Appliances, Assayers' Instruments and Appliances and Apparatus Employed in the Laboratory.

DIVISION IV.

PRODUCTS OF MANUFACTURES AND TRADES.

CLASS 13. Sec. A. Manufactures in Metals—including Pig, Bar and Rolled Iron, Plain and Ornamental Castings, Stoves, Crude Statuary in Iron and Bronze, Wrought Iron Work, Sheet Iron Work, Carriage Smith Work.

Sec. B. Locksmith Work, (Tools not enumerated in Division 3), and for Manufacturing and Producing, Cutlery, etc.

Sec. C. Brass, Tin, Lead and Composite Castings, Brass Finishers' Work, Copper Still Worms, Pipes and general work, Lead Pipe, Sheet Lead, Shot, Plumbing, Gas Fittings and Tin Ware, Wire Work, other than in Class 37; Electrotypes, Stereotypes, etc.

CLASS 14. Sec. A. Manufactures in Wood—including Sawed Lumber and Timber, House Carpenters' and Joiners' Work, Scrolling, Turning and Moulding.

Sec. B. Casks, Barrels, Tubs, Pails, Kegs, Wood and Willow Ware, Brushes.

Sec. C. Furniture, Tables, Chairs, Bedsteads.

Sec. D. Carriages, Wagons, etc.

CLASS 15. Manufactures in Glass, Earthenware, Pottery, Stone, Glass Blowing, Cutting, and Coloring in process of manufacture, Bottles, Demijohns, Globes, Window Glass, Mirror Glass, Crockery, Porcelain, Fire Proof Ware.

CLASS 16. Manufactures in Leather, Rubber and Gutta Percha—Harness, Saddlery, Boots, Shoes, Hose, Trunks, Valises and Buckets.

CLASS 17. Manufactures of Wool, Cotton and Silk—Furs, Blankets, Woolen Cloths, (Clothing and all material made from either of the foregoing or mixed.)

CLASS 18. Manufactures from Fibres and Pulp—embracing Hemp, Manila, Flax and Ramie; Hemp and Manila Cordage, Twines, Paper from Rags, Straw, and other material, Papier Mâché.

CLASS 19. Various Manufactures not previously classed—Upholstery, Carriage Trimming, Paper Hangings and Decorations.

DIVISION V.

ENGINEERING AND ARCHITECTURE.

CLASS 20. Naval Architecture and Engineering—including Models. and Designs of Ships of War and Commerce, Boats, Yachts, Barges, Life Boats and Life Preservers, Marine Charts, Light Houses, Marine Signals, Models and Designs of Docks and Floating Docks, Flags and Buoys, Diving Apparatus, Submarine Boats, Floating Batteries, Torpedo Boats, Ancient Vessels and Transports, Propellers and Paddle Wheels.

CLASS 21. Military Engineering and Architecture—Armor, Ordnance, Firearms, Gunpowder and other explosive material, Tent and Camp Equipage, Accoutrements, Gun Carriages and Apparatus, Matches, Fuses, Pyrotechnics, Designs and Models of Fortifications and Land Defences, Military Bridges, Pontoons, Signals, Flags, Modes of Mining, Ancient Armor and Equipments, Cases of Medicaments for Army Surgeons, Ambulances.

CLASS 22. Civil Engineering and Architecture—comprising Architectural and Building Designs and Models, Ornamental Stones, Lime and Mortar, Cement, Artifical Stone, Beton, Tiles, Flags, Drain Pipes, Brick, Slate, Roofing Material, Preserved Wood, Apparatus and Method of Testing Material,

Piles, Screw Piles, Modes of Obtaining Foundation Material for Roads and Repairing the same, Models, Plans and Drawings of Public Works, Bridges, Aqueducts, Sewers, Workmen's Residences, Sanitary Appliances, Agricultural Engineering.

DIVISION VI.

WORKS OF ART.

CLASS 23. Painting in Oil and Water Colors, Chromos, Crayons and Porcelain Painting; and Drawings as distinguished from Architectural Designs.

CLASS 24. Sculpture, Cameo Cutting, Statuary, Plaster Work of Art, Pressed and Chiseled Medals, Engraved Stones, Chemical Engravings, Carving in Wood.

CLASS 25. Coloring, Staining and Embossing in Glass, Church Windows, Retouched Photographs, Articles of Taste in the Precious Metals and Stones, and Imitation, Lapidary Work, Gold Ware, Silver Ware, Watch Cases, Bijouterie.

CLASS 26. Lithography, Plain and in Colors, Engraving on Copper, Steel, Wood, Stone, Plain and in Colors, Photography on Paper, Wood, Stuffs, Enamel, Photographic Stereotypes, Stereoscopic Proofs.

CLASS 27. Wax Work, Hair and Rubber Jewelry, Galvano-Plastic, Light Articles of Taste and Device Work, Plastic Moulding.

DIVISION VII.

THE LIBERAL ARTS.

CLASS 28. Specimens of Printing, Publishing, Specimens of Typography, Proof Sheet of Autography, of Lithography, of Engravings, New Books, Collection of Books, forming Libraries on Special Subjects, Periodical Publications, Technical and School Atlases, Albums, Celestial and Terrestrial Globes.

CLASS 29. Book Binding and Stationery, including Paper, Cards, Pasteboards, Pens, Inks, Pencils, Copy Books, Registers, Elastic Bands, Paper Boxes, Lamp Shades, Paper, Ruling.

CLASS 30. Sign Painting, Scenic Painting, Staining, Polishing, Graining, Marbling, Lettering, Carriage Painting, Ornamentation in Oil and Water Colors.

CLASS 31. Musical Instruments, Wind Instruments, Metallic, Reed and String Instruments, Pianos, Organs, Melodeons.

CLASS 32. Millinery, Dress Making, Cloak Making, Sewing Machine Work, Crochet Work, Knitting, Playthings, Toys, Laces, Embroidery.

DIVISION VIII.

CHEMICAL PROCESSES AND PRODUCTS.

CLASS 33. Metallurgical Processes—Roasting and Smelting Furnaces, Blast Furnaces, Methods of Reduction, Evaporation, Condensation, Processes of Generating Illuminating Gas.

CLASS 34. PROCESSES AND PRODUCTS OF DOMESTIC ECONOMY—Flour, Bread, Crackers, Maccaroni, Spices, Preserved and Condensed Meats, Preserves, Sugars, Syrups, Candy, Butter, Cheese, Tapioca, Vermicelli (and generally under heading of Groceries) Dried Fruit of all kinds.

CLASS 35. SEC. A. FERMENTED CEREAL AND VINOUS PRODUCTS—Sparkling and Still Wines and Liquors.

SEC. B. Bitters, Cider, Ale, Porter, Beer, Vinegar.

CLASS 36. CHEMICAL AND PHARMACEUTICAL PRODUCTS—Acids, Alkalies, Wax, Soap, Perfumery, Resins, Essences, Dyes, Varnishes, Painters' Materials, Processes of the Laboratory, Bleaching, Dyeing, Curing, Tanning, Vegetable and Animal Oils, etc.

DIVISION IX.

POMOLOGICAL AND HORTICULTURAL.

CLASS 37. Hot Houses, Summer Houses, Garden Vases, Flower Stands, Wire Stands, Fountains, Appliances for the Horticulturist, Objects of Ornamentation for the Garden, Miniature Gardens.

CLASS 38. PLANTS IN POTS AND BEDS—Indigenous, Imported, Hybrid.

CLASS 39. FRUITS.

CLASS 40. GARDEN VEGETABLES.

PREMIUMS.

There will be awarded, in accordance with the recommendation of the various Examining Committees and at the direction of the Board of Managers, the following grade of Premiums on articles exhibited in accordance with the rules of the Eighth Industrial Exhibition:

1st	Premium	Gold Medal.
2d	"	Silver Medal.
3d	"	The Society's Diploma.
4th	"	Honorable Mention.

The Medals will be accompanied by a "Certificate" of the award, sufficiently large to frame.

Further and Special Premiums may be awarded by the Managers, in accordance with the recommendation of the Examining Committee.

SPECIAL CASH PREMIUMS.

With the view of stimulating and encouraging inquiries in the various subjects herewith appended, and the industries connected therewith, the following *Premiums* are offered to be paid the successful competitors at the close of the Industrial Exhibition, either in cash or engraved plate of equal value, as they may elect—it being understood that all communications, papers, reports or essays, for which premiums may be given, shall be the property of the Mechanics' Institute, to be disposed of in any manner it may deem proper, and that no papers which have been read in any public manner, or previously published in any form, shall be admitted to competition. The essays and reports which receive no premiums will be returned to the writers.

Competitors for the premiums offered for Reports and Essays, must file the same with the Recording Secretary on or before the 8th day of August, 1871, over a fictitious signature, accompanied by a sealed envelope containing real name and key. The Reports or Essays should be as concise as possible, and must be sealed and endorsed with name of subject treated:

For the best General Report on the Manufacturing Interest in California, its present condition and future prospects ; Statistics of Manufactures, showing their establishment, progress and present status ; Imports, Exports and Consumption—causes operating against and for it.....$400

Best Report on the Currents and Tides in the Bay of San Francisco—the effect of building piers, jetties and obstructions therein—the requirements of the harbor and the needs of shipping, and matters of interest in connection therewith and the water-frontage of San Francisco..... $250

Best Report on the Timber of the Pacific Coast, its adaptability to the industries—embracing its application to ship-building, house-building and general construction, with specifications of location, distinctive features, durability, transverse strength, value in San Francisco.. .....$250

Best Collection of Woods of the Pacific Coast—not less than four samples of each wood, two of these samples to be 12 inches long and 2 inches square, and two to be 12 inches long, 6 inches wide and 1 inch thick—each specimen to be faced on one side, properly classed and labelled with species, transverse strength, specific gravity, green and seasoned, location, dimensions of tree the specimen is from, soil, exposure, special characteristics, etc.....$250

Second ditto.....$100

Above specimens to be the property of the Institute.

Best Collection of all kinds of Stone of the Pacific Coast, with report on location, accessibility, available for building purposes, pavements, slating, flags or ornamental work ; limes, cements, etc.....$250

Specimens to be the property of the Institute.

Best Street Pavement, adapted for heavy traffic and the climate of San Francisco, accompanied by statement of cost, methods of construction, durability, etc.....$150

Best Report on System of Drainage, adapted to the City of San Francisco, its sanitary requirements and its future wants.....$200

Best system for economical transportation of ores, minerals and goods over mountainous places and difficult roads, and its application more particularly to conveying the products of the mines to the mill.....$100

Best system of Reclaiming Overflowed and Tide Lands.....$100

For the best Essay or Report on the various modes of treating ores of gold and silver, here and elsewhere, showing the best *practical* results, (*i. e.*, the largest percentage of precious metal at the lowest cost) where and how obtained, with a view to pointing out the advantages and defects in the system adopted on this coast in the management of the mines, above and under ground.....$250

NOTE—In the above Report it is not the object to advance any new theory but to confine it to practical processes, modes and results, now in existence. It is also desirable that the methods adopted in the reduction of low-grade rocks in Australia be presented.

For the best method of Clearing and Cultivating Tule Lands.....$100

Report on the best economical process of Preserving Timber and Wood from decay, with samples.....$100

Best and most successful attempt to raise Ramie Plants in California, with statement of cultivation, method, etc.....$100

Best and most successful attempt to raise Beet Root for Sugar in California, with statement of method of cultivation, and other data in connection therewith.....$100

Best and most successful attempt to raise Tea in the State of California, of good merchantable quality, with statement of mode of cultivation, and other data in connection therewith.....$100

Best and most successful attempt to raise merchantable Cotton in the State of California, with full report on the same $100

Best and most successful attempt to raise Tobacco in California, accompanied by report.....$100

Best and most successful attempt to raise good merchantable Rice, accompanied by report.....$100
Best collection and largest variety of Metals of the Pacific Coast..... 100
Best Design for an Iron Frame for Roof..... 100
Best Design (with specifications) of a Cocoonery adapted to climate of California.....$100

The above Premiums are to be paid either in cash or plate (engraved) of equal value, at the discretion of the successful competitors. The Board of Managers reserve the right to reject any Report, Essay or Exhibit, which may be deemed by the judges to be unworthy.

By order of the Board of Managers,

A. S. HALLIDIE,

San Francisco, November, 1870. President.

OPENING EXERCISES

OF THE

EIGHTH INDUSTRIAL EXHIBITION.

The Eighth Industrial Exhibition of the Mechanics' Institute was inaugurated on Tuesday, the 8th of August, 1871, under the most favorable auspices. At the hour announced the spacious Pavilion, which had been so appropriately dedicated to this purpose three years before, was thronged in every part by a delighted assemblage of citizens and strangers visiting San Francisco. All classes were largely represented, and youth and age, male and female, were alike attracted by the interest attached to the occasion.

Promptly at 12 o'clock the stand erected near the fountain in the centre of the main building was occupied by the President, Officers, and Board of Trustees of the Institute, the Orator of the occasion, Chaplain and invited guests, among whom were the special Commissioners from Japan. Schmidt & Schlott's Band (a most attractive feature during the entire Exhibition) enlivened the scene with their admirable music, and the happy voices of the children of the Public Schools, under the direction of Professor Washington Elliott, as they joined in the singing of appropriate pieces, was a most pleasing portion of the notable proceedings of the day.

The exercises were commenced by the delivery of the following introductory address by A. S. Hallidie, the President of the Institute:

INTRODUCTORY ADDRESS.

Ladies and Gentlemen—To-day we are to open an Industrial Exhibition, the eighth under the auspices of the Mechanics' Institute, and on this Pacific shore. It is one of the events we should feel proud of—it is an epoch in the industrial interests of the State, and satisfactory because it is of progress. We should feel proud of it because it bears evidence of a higher civilization in

the arts, and an increasing capacity for manufacturing and producing—suggesting that the time is not far distant when California will not only be able to sustain herself, but able also to supply other nations with the substantial results of her skill and manufacturing ability. But for all that, we are moving on in an uncertain, tumble-about manner; scarcely steadied down to the stubborn fact of life, which, in spite of our best efforts to suppress, will rise to the surface.

We can scarcely give up our careless extravagance, our 1¼ per cent., our gold currency, this letting a man do as he pleases and making him if he don't, and all these traditional things which keep us in a bad way for the proprieties, and stir up the little feelings which have no business to exist between man and man.

It is better far that all concerned in the "material industries" should understand themselves, and that shadows should not be mistaken for substances, or the mirage for the real thing. We would find that wrongs could easily be adjusted by a little patience, a little forbearance and some calm reasoning. Certainly it is essential for the welfare of the State that all should join in promoting the interest of the Mechanic Arts, in encouraging manufactures and industries of all kinds, that we may be able to sustain ourselves, and supply customers from abroad. To this end are these exhibitions which bring under one roof the products of the skill and labor of our people. The awarding of premiums, *I think, should be incidental to, not an essential part of these exhibitions.* The wares of an exhibitor are best judged by the people. The value of these exhibitions consists in showing the relative condition of our industries, in the concentration or bringing together of exhibitors and visitors under one roof for intercourse and commerce, and in the elevation of the people by the appreciation of the dignity of labor. Of course, there are other subsidiary benefits, but the condition of an industrial exhibition like this furnishes the key-note to the scale of a nation's prosperity. The people of San Francisco have always taken a deep interest in these Industrial Fairs, and their ever-generous response to the labors of the industrious classes indicate the direction of their thoughts, and builds up our hopes in a bright future for the State.

California, as a State, is not behind her sisters in mechanical skill and inventive genius. Her children have a vigorous constitution, and in the developments of manhood demonstrate through their experiences of necessity the necessity of experience. Knowing how hard are these lessons of experience, it is a pity they are usually so soon forgotten, and it would seem that we learn but little from the past. Indeed, a stray grain from a desert of everlasting self-producing sand, blown by a chance wind into the crevasse of Yosemite, seems of unmeasurable magnitude compared to the applied teachings of the past experience of mankind. Looking around us, in this edifice filled with the suggestion of peaceful industry with the products of man's ever-restless brain, it would seem that "man's inhumanity to man" was forgotten in that higher hope of peace on earth and good-will.

The gathering together of the industries of the people possesses in itself suggestions of deep interest to us in California, which the distinguished citizen who is about to deliver the opening address, I doubt not, will refer to. California possesses the key to the trade of the Pacific, which nothing but blind stupidity can lose to her; and although her citizens have occasional manias of suicide, let us hope that the States' common sense will save her from such a fate. A broad, liberal and conscientious line of conduct, honesty of thought and action to all alike without distinction of color or race, are essential to our prosperity as a community or a people. More nationality, more Americanism, that is what we want. Not citizens of America alone, but *American citizens*, in every sense of the word, first, last and all the time—having the spirit and the will to elevate the Mechanic Arts, *and to insist on the education of the people.* Can you expect a true distinctive nationality, with its noble patriotism, its generous treatment of strangers, its comprehensive protection, as long as you have a demonstrative political sympathy with other nations, be they never so friendly, by bands of men organized and in many cases armed, and who are naturalized as citizens of America? I think not. And I do not believe there can be any half citizenship.

These exhibitions bring nations together on a common level. They show that skill, ingenuity, genius and invention exist everywhere and in a truly republican condition; and we note more particularly at this Industrial

Fair the products of those nations, which had walled themselves in by their ability to live within themselves and their mistrust of other countries, who, having let down the bars of exclusiveness, are rising above misanthropy, and, with the enterprise of a renewed youth, absorb the spirit of progress and enter into the race of nations, with confidence in their future, and with the hope of sympathy from the people of America.

Providence retained California for the American people, because she believed in the American nation, and now with one foot on the shores of the Pacific ocean, holding with one hand on to the top of the Sierra Nevadas, stretching the other far out over the Pacific seas, with a perfect physical health, clear in intellect, full of the nervous magnetism of life, can we not, in the reliance of our own strength, take our position with moral courage as an advancing nation, ready and willing to extend courtesies, kindnesses and protection to those nations opening to us their commerce and extending their good will?

A nation of forty millions of people, the larger portion of whom are endeavoring, in good faith, to shake off the fetters and restrictions which contract its growth among nations, and by the construction of railroads, of telegraph lines, the building of bridges, the modernizing of modes of agriculture by the introduction of agricultural machinery, and various other material improvements, shows its appreciation of modern invention and ingenuity.

To such a nation the Mechanics' Institute of this city sent greeting, asking it to come over here to this new State of ours—this California, twenty-one years of age—age of manhood—and see what we were doing—what we could do for it, and it for us, promising such as should visit our shores kindness and courtesy, and freedom to examine and inspect our industries, our manufactures and institutions of learning.

Accepting in good faith our invitation, the Japanese Government has commissioned several distinguished citizens to visit us, and they are among us to-day as guests of the Mechanics' Institute, which bespeaks for them your consideration and kindness in facilitating the objects of their mission by furnishing them opportunities to see and examine our industries and resources.

I need hardly refer to the exhibits from Japan—these will best speak for themselves—but to mention, in this connection, that they were sent to this Exhibition on our representation.

As an evidence of the appreciation the Japanese people have for the United States, their young men are students in various colleges in this country. There is one school in Japan containing 1,200 pupils studying the English language, and the Commission before referred to is the first that has ever visited the United States or Europe on such a mission.

Towards this Exhibition contributions have been received from Australia, China, the Hawaiian Islands, and the adjacent Territories and States, and I believe I may safely state that, in general display, newness of products and variety of exhibits, it surpasses any heretofore held on this coast.

Applications for space poured in, and exceeded by many thousand feet all we had to give, and in consequence many have been refused space on account of our inability to supply the room desired. Of course, exhibitors are behind. They always are at the beginning, but they come out ahead in the end. The bare tables and walls will be covered in a few days; the space has all been allotted—every foot of it—and if the present claimants do not occupy it without delay, it will be apportioned to anxious-waiting applicants. The managers meantime beg your patience and indulgence.

The present building covers an area of about 100,000 feet, exceeding by 20,000 feet the Exhibition of 1869. The managers have been untiring in their efforts to make it complete in all its details.

The Bay District Horticultural Society holds its first exhibition at the same time and during the same term as the Industrial Fair. This young society has shown a vast amount of enterprise, and is deserving the utmost success. I trust its membership may be largely increased, and that it may engender a taste for horticulture among the people of the bay district.

There is one question which rises up before me every little while, and to which I beg to refer. It is: What shall we do for an exhibition building when this is torn down? This will be the third Industrial Fair held here; it seems consecrated to industry, and it pulls somewhat at the heart-strings

when I reflect that it must soon pass away. It has occurred to me that there might be a sufficient number of public-spirited gentlemen in this city who, recognizing the value of the Industries and the Mechanic Arts, would club together and erect a building of sufficient capacity near the heart of the city, and consecrate it to the arts and sciences.

The Mechanics' Institute has already expended about $130,000 in temporary structures, and this sum would go far towards erecting a noble building of a permanent character.

Ten months since, the Mechanics' Institute offered various premiums, payable in cash, amounting to $3,300, for reports, essays and exhibits bearing directly on the material interests of California. To-day the time for receiving these reports expire. I sincerely hope that there are many competitors, and that the whole amount of premiums may be drawn, for in that case the people of California would be many fold the richer.

I have received an invitation from the American Institute for California to contribute towards the Industrial Exhibition to be held in New York City, opening September 7. In order to enable exhibitors from this Fair to take part in that exhibition, the time for receiving articles has been extended a sufficient length of time to enable them to reach New York after the close of this exhibition.

In conclusion, and on behalf of the Board of Trustees of the Mechanics' Institute, I beg to invite strangers and others to visit the reading-room and library of the society, on Post street, where they will be at all times welcome; and I trust also that all may find their visits to this Industrial temple agreeable and instructive, so that after its close it may occupy a pleasant corner in their memory.

HON. MILTON S. LATHAM'S ADDRESS.

After the invocation by Rev. John Hemphill, and music, the President introduced Hon. Milton S. Latham, who delivered the following eloquent and appropriate address :

Mr. President, Ladies and Gentlemen—This occasion has brought hither the representatives of the great motive power of national prosperity. Here are the men by whose agency the material comforts of life appear around us, and the elements of civilization are in process of continual development. What is it that has drawn the line between barbarism and civilization and fixed the horizon which separates the world of light from the dominion of darkness? It is the genius and vigor which direct the mechanical forces. The very globe we inhabit was as revelation tells us, "without form and void" till the Almighty moved upon chaos and then order and beauty everywhere appeared.

It is a sublime thought of the English philosopher that the human mind is a spark, an emanation of the Deity, a congenial spirit in the domain of poetry, having exclaimed:

> "O thou! who first from solid darkness struck
> That spark, the sun, strike wisdom to my soul."

There is no branch of science fraught with more interest, or productive of nobler results than the department which teaches the principles of mechanics by which the material evidence of comfort and luxury have been established at successive periods of the world, and are everywhere rising in this continent. The great American statesman, Mr. Webster, in his epigrammatic and matchless style, referring to the columns of national prosperity, said it was supported by agriculture, the mechanic arts and commerce. These are the elements of strength by whose harmonious corporation the republic has risen to a proud eminence in less than a century, holding its high position as a model form of government in the family of nations, embodying the true representative principle in the local and general government, opening its doors to kindred races capable of assimilating, appreciating and upholding the principles upon which our institutions are founded. Who but the Infinite can set bounds to the achievements of the human mind in its discoveries and assertion of its

own wonderful power in rendering subservient to man the silent yet irresistible powers of nature ?

"Mr. Speaker," said the eccentric orator and statesman of Roanoke, in the House of Representatives, "society is divided horizontally ; those who do the head-work above, and those who do the hand-work below."

Now, gentlemen of the mechanical association of this the commercial capital of the Pacific slope, you have done and are doing "the head-work above;" in making the mechanical forces you are directing subservient to the mind, by carrying out your behests in doing "hand-work below."

In the early periods of the world machinery was moved by muscular force, by water, by the air, by weights, and springs, yet mechanical contrivances and combinations were in operation long before the principles upon which they rest had been discussed or developed as a science and branch of natural philosophy. The massive structures which stand in the valley of the Nile are enduring evidences of the mechanical powers that existed at a period so early in the world as to be almost pre-historic. From the days of Herodotus, nearly four and a-half centuries before the Christian era, they were regarded with special interest by that Greek historian, on account of their antiquity even in that day, and in view of the wonderful amount of labor required to build them, over one hundred thousand persons having been compelled to labor upon the great Roman pyramid of Cheops. They have defied for forty centuries the destroying hand of time, bearing upon them inscriptions of historic interest in hieroglyphics, a key to which has been discovered by the genius of modern times.

Mechanical skill, centuries subsequent to the founding of the pyramids, was developed in forms of unrivalled beauty in the Greek islands. In Athens and elsewhere in the Hellenic islands models of perfect architectural taste existed, the temples of Jupiter, of Neptune, the Parthenon, the Temple of Minerva, the Pompeion in which was kept the sacred vessels used at festivals and which was adorned with the statues of Athenian heroes; the temple of Theseus, the place of refuge for the persecuted, were among the proud monuments of Grecian taste.

St. Paul, when in Corinth, realized not only the loveliness of nature in soft sunlit skies with varied landscape outlines, but felt the presence of man's creative genius in the matchless forms of architectural taste—the slender Corinthian column, the finished capitals, and the other exquisite orders of classic style. He appreciated the flexibility, the force and polish of the ancient Greek tongue, the language of conversation around him, the medium of the teachings of philosophy, of eloquence, of poetry; for in his address to the Athenians he quoted from the ancient Greek poets in saying : "For in him we live and move and have our being ; as certain also of your own poets have said, for we are also his offspring." The own poets have said, "for we are also his offspring." The Greek poets thus referred to were Aratus and Cleanthes; the mind of the former, kindling under the light of nature centuries before the Christian era, recognized the Supreme Being, in declaring,

> "He animates the mart and crowded way,
> The restless ocean and the sheltered bay;
> Does care perplex? Is lowering danger nigh?
> *We are his offspring*, and to Jove we fly."

In the same spirit the other ancient poet exclaimed:

> "Great Jove! most glorious of the mortal band.
> Worshipped by many names, alone in might,
> Author of all! whose word is nature's law,
> Hail! unto thee may mortals lift their voice.
> *For we thine offspring are;* all things that creep
> Are but the offspring of the voice divine."

In pursuing the subject in this direction for a moment, by glancing again at the relations of this sublime teacher of the New Dispensation, the first missionary to extend his teachings beyond Judea, the fact will not be overlooked that this inspired person united to profound learning in languages, philosophy and poetry, the knowledge of a manual art acquired in obedience to Jewish law, and that, whilst filled with living images of beauty around him, in nature, in the dominion of art and of mind, he negatively bore testimony of his appreciation of these, when he exclaimed to the Corinthians:

"Eye hath not seen nor ear heard, neither hath it entered into the heart of man the things which God hath prepared for them that love him."

The Greek taste, at a period more than two centuries antecedent to this, had passed to the Italian peninsula. Archimedes, a native of Syracuse, in Sicily—an island which had been settled by the Greeks but afterwards became a Roman province—was renowned for his knowledge of geometry and the laws of mechanism. He had demonstrated the laws of the lever and the important principles of the centre of gravity. He resisted, by his mechanical genius, the attacks of the Roman consul, Marcellus, in the siege of Syracuse, one of the most remarkable in ancient warfare, having seized with his machinery the Roman ships, raising them into the air and shattering and sinking them into the deep.

THE ARTS AND SCIENCES OF PAST AGES.

Republican and Imperial Rome was adorned, too, with structures of beauty and taste. The Eternal City, seated on seven hills, the centre in the ancient world of political power for a thousand years, had risen from being a scattered village of cottages on the Tiber to be the abode of a population variously estimated at from two to four millions. It was adorned with magnificent edifices, temples, amphitheatres, buildings for the assemblies of the people, porticoes, piazzas, triumphal arches, trophies and public sewers. Its aqueducts were works on a stupendous scale, whilst Roman territory was, from the centre of the State to its circumference, traversed by public highways, constructed with immense labor through masses of rocks and hills, by embankments with bridges spanning marshes, ravines and rivers; connecting the provinces, forming lines of communication through Southern and Western Europe; extending even into Asia; crossing the islands of the Mediterranean Sea—main lines having been established by the Romans even in England, from north to south, and from east to west. The present city is embellished with massive structures of modern mechanical skill, attracting at the same time the antiquarian and man of science, by the ruins of the ancient triumphs of mechanical arts—the Column of Trajan, of Antoninus, the Pantheon, the ancient Forum, the arches of Severus and Titus, the Temples of the Sun and Moon and the Coliseum.

The distinguished historian and philosopher, Edward Gibbon, visited these ruins in the last century, with the intent of writing the history of the city. As he sat gazing upon them by moonlight, and heard around the chaunting of religious orders, his luminous intellect, rising from the contemplation of the scene immediately before him, determined to inquire into the causes of the decline and fall of the Roman Empire, and, after years of labor, gave to the world of letters his great work on that subject.

In the progress of time, disintegrating causes and desolating agencies shook to pieces the ancient fabric of political power, detaching, near the middle of the fifth century, from the central authority, the Colony of Great Britain, which in turn became the land of the Anglo-Saxons of our forefathers—a race which, in a struggle of fourteen centuries, has steadily advanced in the arts, sciences and letters, elevated by the teachings of a sublime faith, intellectually expanding under the influences of civilization, developing and rendering practical to the noblest uses the laws of mechanical science.

We trace with interest and undissembled pride the progress, growth and development of social and political institutions from the time the British Islands, by separation, ceased to be a Roman Colony, until the termination, in the eighteenth century, of the six years' war between Great Britain, France and Spain, for colonial ascendency. During that period or over a thousand years, amidst domestic convulsions, foreign wars, and in passing through the dark eras of the feudal ages, there has been a steady advance in the utilitarian arts, in improvements, in domestic economy, in the social system, and political institutions; in the last, by the establishment of the trial by jury, by securing Magna Charta, which Mr. Hallam calls the keystone of English liberty; in the recognition as a legislative power in the *Witena-gemot*, or National Assembly, resembling in some respects the Lords and Commons united in one body; in the enactment of the *Habeus Corpus* Act; and, above all, in the recognition of the freedom of the press—the press, which was called the *fourth*, but is now the *first*, estate of a free people.

De Lolme, in preparing his profound disquisition on the British Constitution, ransacked folios containing the compilations of the English law, to find authority guaranteeing the liberty of the press; not having succeeded, he called upon Mr. Justice Viner, Professor of the Law Chair, to point out to him the legal guarantee in that respect. "It will not be found in the Statutes," was the answer; "it exists because not forbidden."

The fundamental law of this land, among its noble guarantees of individual and public rights, has, by express provision, given security to the press in its high calling, as the great teacher of society in all the relations of life and as the guardian of individual and public rights.

During the three quarters of a century which elapsed from the British revolution of 1688, until the treaty of peace in 1763 between the three great powers, the influence of the working and mechanical classes was steadily on the increase. The education of the laboring masses had been gradually improved, and the true principles which govern in labor and capital were better understood. Mechanical forces had been successfully applied to meet the wants of man-from the cabin to the castle, from the ship on the Thames to the leviathan ship on the ocean, and those principles had been elucidated and reduced to the exact forms of science.

The lever, the inclined plane and the pulley were regarded, in practice as in theory, the great mechanical powers; the wheel and axle being a continual and revolving lever, the wedge a doubled inclined plane; whilst the screw, as a revolving inclined plane, is so known in mechanics.

When peace was established, near the middle of the last century, new vigor was given to the material interests of Great Britain. Her mechanical and laboring classes, co-operating with capital, directed by the ruling minds of the country, rapidly increased her wealth and developed her resources. The fields of agriculture were enlarged, new and improved agencies applied to bring from the earth increased supplies. Towns and cities were improved, the sphere and power of machinery was expanded. The nation felt the presence of increased wealth which poured into the centres of British trade by British industries and conquests; and labor, harmoniously uniting with capital, moved its herculean powers to noble ends, making new and more comfortable abodes for the laboring classes, and building stately castles and palaces.

Improved principles were introduced in ship building, and vessels of increased strength and size were added to the naval and commercial marine —the former, as the wooden walls of England, to assert her power and protect her commerce, the latter to seek new avenues of trade with European States, the then American Colonies, and even into the distant Indian Seas. British power, which first obtained a foothold on the Indian mainland by the cession in 1689 of a small strip of territory where Madras now stands, has been gradually expanding so as to now embrace over one million four hundred and twenty-seven thousand square miles, with a population of one hundred and seventy millions.

INCREASE OF OUR POLITICAL STRENGTH.

In recurring to the stirring events near the middle of the last century, when Great Britain wrested from France the Canadas and other French possessions on this continent, it will be borne in mind that in the Treaty, before mentioned, of 1763, which followed, the King of Great Britain agreed to limit, and did restrict, the western boundary of the thirteen English Colonies, the nucleus of this Republic, to the middle channel of the Mississippi river—"irrevocably" is the term used in that instrument—and relinquish to France all the territory claimed by that power, west of the river. So with *that* as our Western boundary, having the Atlantic on the East, the great Lakes on the North and the 49th parallel, and on the South the 31st degree of latitude with the St. Mary's to the ocean, we emerged from the war of the revolution as the United States of America with a surface *then* but little in excess of the area of our present territory embraced in the Pacific slope.

Now, gentlemen, what mighty changes have taken place within the last one hundred years! The progress of mind during that time, in political science and mechanical arts, is centuries in advance of any previous period of the world's history. In political science the statesmen of the American Revolution, who declared the principles upon which this republic was founded,

were admitted by Lord Chatham to be an assembly of the most illustrious of the men of any age. They made an issue with the statesmen of England in the British Augustan age of science and learning. It was a political and business issue, and upon it they staked all that was dear to man. Upon the closing of the revolutionary struggle the attention of the leading minds of that age was engaged in the important consideration of forming a more perfect government, which resulted in the formation of the Constitution which went into operation in 1789. In the discussion that preceded the adoption of that instrument, difficulties arose in settling the relations which should exist between the small and large States. Finally it was determined that the States in their separate capacity should be represented as equals in one branch of the legislative department, whilst in the other the representatives should be chosen in ratio of numbers from the States—a principle never before brought into practice in any of the enlightened governments of the past, by which the States and people of the Union are completely represented in the national councils. When this constitutional provision was adopted, Dr. Franklin, rising in convention and pointing to an ancient painting upon which the lower edge of the sun was touching the horizon, said: "Mr. President, it has been a question with artists whether that sun is setting or rising. As a symbol of this Union it is in the ascendant." Mr. Madison foretold its capacity when he declared it would be found to be equal to the wants of the multitudes which should spread over this continent. These predictions have been fully realized, for since our entrance into the family of nations the limits of the Republic have been expanded—first by the treaty of 1803 with Napoleon ceding Louisiana; next with the treaty of 1819 of Spain ceding the Floridas; then the admission in 1846 of Texas into the Union; the treaties of 1848 and 1853 with Mexico, and finally the treaty of 1867 with the Czar of Russia, by which was conveyed the whole of Russian America. So that the boundaries covered nearly four million of square miles, reaching from ocean to ocean, through 58 degrees of longitude, and 25 degrees of latitude, from the northern lakes to the gulf of Mexico. Our coast on the Atlantic with the gulf line extending from the St. Croix to the Rio Bravo del Norte; our Pacific sea coast, with the exception of British Columbia, stretching from the arctic circle to the 32d parallel, giving us commanding position on the Pacific, and looking eventually to the control of the trade of the East.

Such have been the results with us of political science in founding institutions possessing vigor and strength equal to the most serious emergency; in successively passing through wars and grappling with domestic violence, emerging from the most severe trials to which a people can be subjected, having renewed vigor, with consolidated power, now standing in the front rank of the nations of the earth.

THE RELATIONS OF LABOR AND CAPITAL.

Now, gentlemen, in the period mentioned mechanical science and art have achieved signal triumphs and wrought out marvelous results. "The ancient languages," said an erudite scholar, "are the golden keys which unlock the treasures of antiquity." It may with equal force be said that labor and capital are the golden keys which unlock the treasures of nature and impart the prosperity and happiness of the people; the principle controlling the value of labor is supply and demand. The more capital there is introduced into a community the greater the demand for labor, and consequently capital is the real friend of laboring men. Labor must have its reward; and capital, which is the friend of wages, naturally seeks profits. Combinations to arrest or suspend labor are mischievous in practice and prejudicial in results, for they lessen the funds for wages. There is no natural conflict between capitalists and laboring men; on the contrary they are of equal necessity to each other's prosperity, capital being dependent on labor and labor on capital. An increase of capital naturally leads to increased profits, and is invariably accompanied by increased wages; in fact, such increase benefits in a higher degree the laboring man. As capital and labor, then, are indissolubly united by the bonds of interest, let them join hands in harmony, steadily co-operating for each other's prosperity, thus subserving the ends of progress, increasing the comforts of our race, and enlarging the sphere of human happiness.

AMERICAN POPULATION AND RESOURCES.

Glance for a moment at the increase of population and material resources of this continent. In the year 1700 the total population of the Anglo-American colonies was 262,000. In 1749 and 1750 the population was 1,000,000. In 1775, upon the eve of an open rupture with Great Britain, it became necessary to ascertain the numbers of the people, and the result of the most careful estimate that could be made, on the basis of taxation and raising armies, was that the total population then amounted to only 2,389,300. In 1789, the year in which the Constitution went into operation, the total property valuation for taxes was $619,977,247, and the number of dwellings at that time 276,659. In the year 1860 our population had run to 31,443,321, whilst according to official and individual returns the real personal property of the country in that year was in value upwards of $19,000,000,000. In the year 1870 the inhabitants of the Union had risen in numbers to forty millions, and had by estimate over six millions of comfortable abodes—the crop of breadstuffs in that year having reached twelve hundred million bushels, valued at $100,000,000; the country possessing fifty thousand miles of railway, with a domestic trade over six times the amount of our national debt.

The increase in the power of labor and improvements of machinery has been equally wonderful. Engines of colossal size and amazing strength and intricate contrivance have been multiplied beyond precedent or conception. These iron giants, moved by the agency of steam upon sea and land, yield instantly to the command of man, rushing with impetuous ardor or pausing at his touch. The capacity of these engines of power is far in excess of the manly strength of the human race. They traverse the highways and water courses of the globe, crossing oceans and visiting distant seas. The elements of life are breathed into them from the coal fields, which in the United States have a discovered area eight times the extent of the whole coal fields of Europe, besides the extensive regions of like material but partially developed between the Mississippi and the Pacific Ocean.

Perhaps the most wonderful evidence of man's power in the dominion of mechanical science is that of the *Great Eastern*, a ship 684 feet in length, 80 in breadth and 70 in depth, capable of stowing 10,000 tons of coal, 5,000 tons of freight, besides accommodating 20,000 persons—a large city on the ocean; whilst our own iron-clad *Dictator*, which is a monitor, will be the most formidable and irresistible armament ever launched upon the ocean.

THE PACIFIC COAST.

Now, gentlemen, turning from these great mechanical results, look at our great State extending along the bold shores of the Pacific, covering a surface of 189,000 square miles. What has mechanical science accomplished in this direction? Look at her as she was at the hoisting of the American flag in July, 1846, at Monterey, and look at her now. In less than a quarter of a century she has risen to the full proportion of a majestic State, seven hundred miles in length, with an average width of over 200 miles. Her vast industrial, agricultural and mineral resources are beyond estimate. In skilled labor and other departments she is rapidly advancing to a permanent rank in the industries of the country. She has contributed to the metallic circulation of the globe nearly $1,400,000,000. Her commercial capital is adorned with massive edifices in finished style of architectural taste. The number of vessels annually arriving is 3,400, with a carrying capacity of more than 1,100,000 tons. She is united by railway to the great railroad system of the Republic, and by electric telegraph to all important points on the globe. Splendid steamers run from San Francisco to all prominent points on the Coast, to the Islands of the Pacific, to Japan, China, New Zealand and Australia. In the near future this State will command the Asiatic commerce and will be the great mart of trade, distributing it over the wide surface of the Union, turning the tide of wealth to our shores and placing us in enviable relations to our common country, with whose interests we are linked for all time by an inevitable destiny.

From the light let us not forget

THE SHADE OF THE PICTURE.

With all our present and future commercial destiny, our great and undeveloped mineral wealth, our agricultural resources, whose future value no living man

can estimate, when the thousands of acres of virgin soil shall bear their golden harvests; yet with all this and even more we can never be truly independent while we neglect manufactures. Exports when in excess of imports alone make a State. For two decades we have paid tribute to the civilized world, enhancing values and stimulating growth to alien countries. Let our people produce what they wear and consume; let the busy hum of wheels of industry resound on every hill, by every water-course, telling of the increase of all the varied mechanism known to man's necessities. Skilled artisans will then throng our streets, and the music of wheels will resound on every side.

The solution of this problem is with yourselves. I am told that in all probability the present will be your last exposition for years. You may well feel proud as you invite inspection to the evidence of your local wealth, and behold the results of so few years of experimental toil. But your task is but poorly done whilst so many shreds are in your woven present. My duty, prepared like moss-gathering in the midst of varied and constant occupations, is now discharged in this hasty *resume* of historical, national and mechanical progress. When at some future day, in future years, you invite the State's people to behold your growth, I trust the greater part of your edifice will be devoted to the productions alone of your own mechanical skill and manufacture. Crude and defective they may be; but let us remember the sculptor's story, whose work was regarded as illy fit for its place until lifted to the lofty summit, where, cloud-capped, the unpolished edges were lost, and the beholder only saw the symmetry and polish of the maker's genius. Thus will you add to Nature's bountiful gifts, and by your energy and skill show to the civilized world that whilst you have found a State, you have left to those who follow an independent and self-reliant empire.

After the delivery of the foregoing address, and a song by the children of the Public Schools, the Eighth Industrial Exhibition was formally declared open.

LIST OF AWARDS.

GOLD MEDALS.

Severance, Holt & Co., Diamond-pointed Rock Drill.
J. H. Culver, Machine for Cutting Twist Moulding.
Jonathan Kittredge, Fire and Burglar-proof Safes.
William M. Betts & Bro., Carriage Springs.
Pollard & Carvill Manufacturing Company, Clarences.
Mission and Pacific Woolen Mills, Blankets and Knit Goods.
California Silk Manufacturing Co., Raw and Manufactured Silk.
Cheney Bros., Hartford, American Silks.
Pacific Wood Preserving Company, Preserved Wood.
Pacific Stone Company, Artificial Stone.
Samuel M. Brookes, Oil Painting.
Pietro Mezzara, (special), Statue of California.
W. K. Vanderslice & Co., California-made Silver Ware.
Jacob Zech, Square Pianos, California manufacture.
California Beet Sugar Company, Beet Sugar.
Benjamin N. Bugby, Bugby's Native Wines and Brandies.
Mission Candle Works, Stearic Acid Candles.

SILVER MEDALS.

Carmen Island Salt Works, Dairy, Table and other Salt.
Henry G. Hanks, best collection of Minerals and Fossils.
J. S. Finch, Ramie Plant and Fibre.
William Deacon & Co., Stationary High Pressure Engine.
N. Seibert, Eureka Lubricator.
William D. Hooker, Double acting Force Pump.
Dr. Blatchley, Light Percussion Drill.
Nelson & Doble, Display of Steel Tools—their own manufacture.
Charles O. Farcoit, Universal Milling Lathe.
Pacific Saw Manufacturing Company, best exhibit of Circular Saws.
Hill & Knaugh, Eureka Gang Plow.
Howell & Low, Harvest Queen.
Travis & Wagner, French Burr Millstones.
John Roach, Surveying Instruments, Solar Transit, etc.
Electrical Construction and Maintenance Co., Electrical Burglar Alarms, and Telegraphic Instruments.
Craig & Savage, Metallic Burial Case and Valve.
Michael Price, best general display of Cutlery.
Mitchell & Co., Napa City, set of Augers—California manufacture.
Will & Finck, special display of Cutlery.
Weed & Kingwell, Manufactured Brass Goods and Bells.
California Last Company, California made Lasts.
James Hatch, Variety Mouldings and Scroll Sawings.
E. K. Howes & Co., Wooden Ware of California manufacture
G. Erlin, Office and School Furniture.
Goodwin & Co., Furniture and Upholstery.
Kimball Manufacturing Company, Carriages, Buggies, etc.
J. Browell, Vitrified Sewer and Water-pipe, and Terra Cotta Work.
N. Clark & Co., Pottery Ware.
Pacific Glass Works, Green Glassware.
San Francisco Glass Works, White Glassware.
Buckingham & Hecht, Boots and Shoes—their own manufacture.
David Samuels, California-made Kid Gloves.
Kullman, Wagner & Co., Stockton, best display of Harness, Skirting, Sole and upper Leather.
Main & Winchester, Harness and Saddlery.
Oregon City Woolen Manufacturing Company, Cassimeres.
Oakland Cotton Manufacturing Company, Grain, Wool, Gunnybags, Burlaps, Twines, etc.
Frank G. Edwards, manufacture of Paper Hangings.
California Powder Works, Sporting and Blasting Powder.
Giant Powder Company, Giant Powder.
City Paving Company, Stow Foundation Pavement.
G. J. Denny, Marine Oil Painting.
W. L. Marple, Landscape Painting.
Edward McGrath, Statuary Marble Mantels.
J. C. Jamison, Bas-reliefs, by Madison Colby.
Haynes & Lawton, Silver Plated Ware.
Edward G. Denniston, display of Replating.
George D. Moore, Colored Photographs and Ivorytypes.
C. E. Watkins, Photographic Views.
Misses Crane & Curtis, Engraving on Wood.
William G. Badger, Hallet Davis & Co.'s Square Piano.
Women's Co-operative Union, Fine Sewing and Embroidery.
Roach & Formhals, method of treating Volatile Metals.
W. K. Dietrich, California Hams, Bacon and Lard.
Eberhart & Lachman, Madeira and Hock Wines.
San Francisco Gas Company, manufactured Ammonia.
J. M. Eckfeldt & Co., Wire Goods.

DIPLOMAS.

DIVISION I.

CLASS I.

I. C. Woods, Carbolic Acid Disinfectant.
W. H. V. Cronise, Cabinet of Minerals.
J. A. Plummer, California-manufactured Salt.

CLASS 2.

J. S. Macfarlane, Auckland, N. Z., New Zealand Products, Oats, Rope, Flax, Tow and Gum.
Col. J. M. Strong, California-raised Cotton.
J. Herzog & Co., Eureka Hair, manufactured from Soap-root.

CLASS 3.

Ferdinard Gruber, Prepared Birds and Animals of California and other Countries.
James Hartley & Co., Fleece of Wool, named Golden Fleece.

DIVISION II.

CLASS 4.

J. Martenstein, Improved Water Guage.

CLASS 5.

The Risdon Iron and Locomotive Works, Steam Winch.
W. J. Tustin, Windmills.
Marsh, Pilsbury & Co., Sturtevant's Noiseless Pressure Blower.
Brown Valve Company, Double Disc Water Gate or Valve.
William E. Phillips, Oiler for Crank Pins.
William Blair, Model of Steam Engine and Boiler.

DIVISION III.

CLASS 7.

Ætna Iron Works, Automatic Steam Vacuum Pump.
A. L. Fish, Knowles' Patent Steam Pump.
G. D. Crocker, Quartz Mill Trip Hammer, etc.
R. Hoskins, Hydraulic Pipe.

CLASS 8.

Jeremy T. Ford, Hook and Eye Machine.
D. A. Faulkner, Punching Machine.

CLASS 10.

SEC. A.—Oliver C. Ely, Napierville, Plows.
Dunn & Campbell, Champion Iron Harrows.
J. H. Mooney and G. A. Lloyd's Forward Action, Adjustable Animal Trap.
Baker & Hamilton, Champion Self Raking Reaper.
M. Barthel, Farm Gate.
Thomas B. Parke, the Family Magic Minute Churn.
Linforth, Kellogg & Co., World Mower and Reaper.
W. A. Field, Self-opening and Shutting Gate.
H. Appleton, Patent Incubator.

SEC. B.—Hunter & Weister, Hunter's Improved Grain Separatcr.
Weister & Co., Improved Corn Husker.
Betts, Bunner & Co., Gorham's Combined Broadcast Seeder and Cultivator.
F. A. Huntington, Flax Brake.
D. & H. A. Winter, Combination Seed Sower and Cultivator.
Hoagland & Pease, Buckeye Tobacco Cutter.

CLASS 11.

Parker Merill, Carpet-beating Machine.
George W. Clarke, Hand Loom for weaving Rustic Window Shades.

CLASS 12.

SEC. A.—John Roach, Mountain Barometer.
V. S. W. Parkhurst, Howe's U. S. Standard Scales.
Charles Pace, Chronometers and Nautical Instruments.

CLASS 13.

SEC. A.—John Payne, Forged and Finished Nuts.
William McKibben, Patent Wheelbarrow.
Calvin Nutting & Son, Metallic Wheelbarrow.
John Burns, Stockton, Horse Shoes.
Pacific Rolling Mills, (Special) Display of Wrought Iron.
Savage & Son, Empire Range, California manufacture.

SEC. B.—J. Weichart, Reaper and Mower Knives and Edge Tools.
E. C. Hurlburt, Combined Door and Bank Lock.
Charles Otto & Co., California manufactured Hardware, Brass and Plated Goods.
George A. Lloyd, Double action Door Hinge and Spring Combined.
Oscar V. Gerzabeck, Patent Yale Locks.
Albert H. Laws, Improved Hinge.
James Stott, Sargent & Greenleaf's Patent Locks.

SEC. C.—Emil Boesch, Patent Lamps, Lanterns and Reflectors.
Brittan, Holbrook & Co., Copper Ware.
Brittan, Holbrook & Co., Japanned Ware.
Thomas H. Selby & Co., (special) Pipe, Shot and Block Tin.
Whiting & Murbur, Window Fastening.
Merrill and Samuels, Safety Lamps.
Tay, Brooks & Backus, Japanned Ware.
Hiram Rosekrans, Sweatt's Sash Tightener.

CLASS 14.

SEC. A.—Schmidt & Burkhardt, Gilt Frames.
Union Box Factory, Nailed and Dove-tailed Boxes and Chests.

SEC. B.—Figer & Bros., Brushes of all kinds.
Hall's Willow Works, Baskets & Willow Ware.
Augustus Friedhofer, Beer Barrels.

SEC. C.—George E. Phelan, Best Cabinet Work and Billiard Tables.
W. J. T. Palmer, Mineral Cabinet.
Weichart & Freese, Show Cases and Furniture.
Ellsworth & Washburn, Patent Folding School Desks.
C. E. Hurlburt, Invalid's Bed and Reclining Chair.
William H. Jessup & Co., Higgins' Improved Bent Wood School Furniture.
Jacob Strahle & Co., Billiard Tables, Elegant Design and Workmanship.
F. W. Butler, Inlaid Parlor and Library Table.
Thornton Westley, Gem Sofa Bed.
Cooley & Green, Crandall Spring Bed.
Allen, Clark & Co., Automatic Parlor Bed.

SEC. D.—Falkingham & Sherwood, Children's Carriages and Rocking Horses.
Taber & Cunningham, Milk Wagon.
David D. Miller, Clarence Hearse.
J. H. Lawton, Skeleton Trotting Wagon.
Casebolt & Kerr, Improved Carriage Wheels.
Larkin & Co., Phaetons and Trotting Wagons.
Henderson & Clarke, Grocery Wagon and Buggy.
Paul Friedhofer, Brewer's Wagon.
E. Soule, Farm Wagon.

CLASS 15.

Lubin & Goldstein, Quaker Burners and Bohemian Lamp Chimneys.
F. H Rosenbaum & Co., Patent Back Mirror.
Thomas O'Neil, best Glass Cutting and Staining.

CLASS 16.

P. Kelly, Ladies, Gents and Children's Custom-made Boots and Shoes.
Dietle & Beck, Custom-made Boots and Shoes.
F. X. Kast, Custom-made Boots and Shoes.
H. Royer, Leather Belting.
S. K. Dodge, Buckskin Gloves.
M. M. Cook & Son, Leather Belting, Hose, Fire Hats, etc.
John Ashton, Dutton's Improved Harness.
Edward Galpen & Co., Trunks and Valises.
H. Behrendt, Trunks and Valises.

CLASS 17.

H. Liebes & Co., best display of California-manufactured Furs.
Joseph Brothers, best display of Boy's Clothing.
Samuel Figel, Boy's and Youth's best Military Uniforms.
Alexander Mackay, Domestic Carpet.
Joseph Lancaster, Custom-made Clothing.
Joseph Figel, display of Men's and Boys' Clothing.

CLASS 18.

Pioneer Paper Mill, Printing and Manila Paper and Paper Bags.
Juliane Frederika Louise Nanns, hand-made Linen Table-cloth and Napkins.
Tubbs & Co., California-manufactured Rope.
Miss Amelia Thomas, skill in Silk Reeling.
Mrs. J. H. Nevins, Hats made from Pine Leaves.

CLASS 19.

W. L. Perkins & Co., Paper Collars and Cuffs.
Hartshorn & McPhunn, Self-acting Window Shades and Rollers.
John D. Burr, Umbrellas and Parasols.

George W. Clarke, Fresco Paper Hangings.
Hollihan & Fried, Rustic Window Shades.
M. E. Austin, Drop and Stationary Curtain Fixtures.

DIVISION V.

CLASS 20.

George W. Dickie, Drawings and Models for Composite Steam and Sailing Vessels.
George A. Lloyd, Boat Detaching Apparatus.

CLASS 21.

N. Curry & Bro., Shot-guns, Rifles and Pistols.
Villigie & Slotterbeck, Shot-guns, Rifles, Pistols and Sporting Materials.
Alfred Swingle, Fire-arms.
Liddle & Kaeding, Fishing Tackle.
Thomas Cullen, Magazine Repeating Rifle.

CLASS 22.

John Daniel & Co., Italian Marble Mantels, Home Manufacture.
Pacific Bridge Company, Model of Smith's Patent Truss Bridge.
J. H. Plath, Architectural Carriage Drawing.
Leon R. Myers & Co., Marble Fountains, Statues and Vases.
Charles H. Foster, Design for an Iron Roof.
Charles H. Foster, Earthquake Proof Truss.
George Schmidts, Drawings of Carriages.
Bones & Pierson, Architectural Drawings.
Asphaltum Pressure Pipe Company, Samples of Pipe.
Wm. Carr, Model of Beidle's Section Wood Pavement.
Skinner & Bonnet, Imperishable Block Pavement.

DIVISION VI.

CLASS 23.

Mrs. Wm. Irelan, Jr., Paintings "En Gouache."
J. L. Bardwell, Display of Foreign Paintings.
Gustavus A. F. Fagerstein, Pastel Portrait of Thomas Carlyle.
Mrs. E. Blanche, Paintings by Kingstonian Method.

CLASS 24.

R. A. Swain & Co., Statuettes, Bronze Figures and Glass Ware.
Francis M. Trueworthy, Stencil Plate Impressions.
George W. Patch, Samples of Stencil Work.
Albert Küner, Metal Seal Engraving.
John Allen, Stone and Seal Engraving.
George W. Shourds, Wood Engraving.
I. W. Taber, Large Plain Photographs.
D. Mencarini, Plaster Busts and Figures.
M. Heverin & Co., Fine Statuary and Marbles.

CLASS 25.

Job M. Seamans, Jewelry and I. O. O. F. Jewels.
Kimball Manufacturing Company, Nickel Plating.
Peter A. Magnus, Ladies' Set of Jewelry, "Silver Filigree."

CLASS 26.

Bradley & Rulofson, Large and Plain Photographs.
Edouart & Cobb, General Photographic Work.
Miss Maggie M. Henderson, Photographic Coloring.
Miss Emily R. Eastman, Photographs Painted in Water Colors.
Charles Gentile, Photographic Views of Indians and Scenery in Arizona.
Thomas Houseworth, Photographic Views.
Bradley & Rulofson, Cabinet Photographs.
Nathan M. Klain, Photographs of Buildings.

CLASS 27.

Mrs. M. J. G. Turner, Modelling in Wax.
Anna Gettz Lucas, Best Display of Wax Work.
H. Kahn, Artificial Flowers.
Rebecca Greenwood, Paper Flowers.
Mrs. A. O. Cook, Modelling in Wax.
Mrs. M. E. Gerrish, Best Arrangement of Fine Wax Work.
Mrs. C. Cook, Best Display of Hair Jewelry and Device Work.
Miss Mary E. Schmitt, Best Ornamental Hair Work.
Atlanta J. Bosworth, Shell Flowers.
Miss J. Gardner, Special Display of Wax Work.
Mrs. M. E. Doherty, Curls, Chignons and Wigs.
Mrs. A. D. Baker, Fancy Leather Work.
Mrs. Cotter, Decalcomanie.
Henry White, Scrap Book.
Miss Addie E. Whitney, Paper Flowers.
Miss Emma Newbauer, Fancy Worked Basket.
Mrs. J. D. Galloway, Agricultural Wreath.
Miss Armstrong, Wax Fruit and Flowers.
Miss Amy Hughes, (Special) Wax Flowers, Leaves and Vases.

DIVISION VII.

CLASS 28.

F. Seregni, Best Penmanship.
Cubery & Co., Plain and Ornamental Printing.
Waters, Newhoff & Co., Book and Pamphlet Printing.

CLASS 29.

J. J. Knowlton & Co., Manufactured Inks, California Manufacture.

CLASS 30.

Henry Burner, Ornamental Glass Sign.
George F. Fuller, Crystal Silvered Door Plates.
George A. Brush, Imitation of Woods.

CLASS 31.

Sherman & Hyde, Weber Grand Piano.
Charles S. Eaton, Esty's Cottage Organ.
Kohler, Chase & Co., Best Cabinet Organs (Mason & Hamlin.)
Kohler, Chase & Co., Best Brass and Stringed Musical Instruments.

CLASS 32.

Mrs. Jane L. Vickery, Patch Work, Bed Quilt.
Mrs. G. W. M. Cowles, Millinery Goods.
Mrs. George W. Goodenow, Hand-made Tidies.
Elizabeth Barrenger, Mrs. Curtis' System of Dress Cutting.
Emma J. Cryer, Tapestry Picture, "George Washington."

Miss O. M. Deck, Tapestry Picture, "Easter Morning."
John H. Mooney, Silent Adjustable Tuck Marker.
Mrs. Phebe Paul, Silk Quilt and Fancy Sofa Cushion.
Mrs. Eva Goldstein, Ladies' and Children's Underwear.
T. Rodgers Johnson, Regalia, Military and Navy Goods.
Mrs. A. H. Makins, Scarfs, Bows and Neckties.
Miss Hattie M. Whiting, Worsted Work.
Miss Julia Middlemas, Rag Mat.
Magdalen Asylum, Lace Work.
Eveline Morris, Gent's Shirts, Collars and Underwear.
Mrs. Ann Van Deursen, Down Capes and Trimmings.
Mrs. Chauncey O. Favor, Embroidered Underwear.
Morris Freud, Shoulder Brace Corset.
Mrs. E. C. Hurlburt, thirty-four Patterns of Tatting.
David Samuels, Embroidered Handkerchief (Pavilion.)
Mrs. M. L. Morgan, Mourning Goods.
Wilcox & Gibbs, Sewing Machine Company, Machine Work.
Mrs. A. R. Hayes, Silk Quilt.
Norcross & Co., Regalia.
Miss Katie Kommer, Shirt Made by Hand.
Miss Mary J. Graham, Tapestry Picture, "St. Patrick."
Mrs. H. A. Williams, Needle Work, "Sutter's Fort."
Pacific Straw Works, Straw Goods.
Mrs. Anna Cordes, Pillow Cases and Tidies.
Miss Winnifred Gibbons, Cheneille Embroidered Fire Screen.
Miss E. Whipple, Afghan.
Miss E. Chamberlain, Silk Quilt, "Log Cabin."
Mrs. P. W. Gibbs, Cheneille Picture.
Miss E. C. Walker, Worked Baby Suit.
Mrs. George Sutherland, Bed Quilt and Knitted Socks.
Mrs. E. Fritz, Zephyr Worsted Rag and Sofa Cushion.
Miss Addie Hyatt, Silk Quilt.
Mrs. Elizabeth Minturn, Basket of Worsted Flowers.
Miss S. A. Nichols, Tatting Handkerchief and Collar.
Mrs. E. H. Watson, Knitted Bed Spread, Tidy and Infant's Sacque
Mrs. J. T. Fowler, Needle Work Quilt.
Miss A. J. Anderson, Patch Work Quilt.
Miss Abbie Cooledge, Patch Work and Embroidered Silk Quilt.
Mrs. J. Truebody, Silk Bed Spread.
Mrs. Horton, Silk Quilt.

DIVISION VIII.

CLASS 33.

Atmospheric Gas Company, Atmospheric Gas Company's Carburator.
J. C. Davidson, Babcock Fire Extinguisher.

CLASS 34.

P. D. Code & Co., Jellies and Jams.
Australian Meat Preserving Company, Preserved Meats.
Erzgraber & Goetjen, Sauces, Preserved Fruits and Meat.
Marden & Myrick, Coffee and Spices.
R. Lehman & Co., display of Assorted Candies.
California Cracker Company, Ship Bread.
P. D. Code & Co., Pickles, Canned Fruits and Vegetables.
Boston Cracker Bakery, Cakes and Crackers.
George Haas & Co., best fancy Candies.
Domingo Ghirardelli, Coffee, Chocolate, Cocoa and Spices.
Brignardello, Machiavello & Co., Maccaroni, Vermicelli, Farina, etc.
R. & F. Tooth & Co., (Sydney) Extract of Meat.
Oakley's Mills, Flour, Meal, etc.

CLASS 35.

SEC. A.—Alois Finke, best Champagne.
Clement Von Detten, best White Wine from Foreign Grape.
I. Landsberger & Co., full exhibit of Still and Sparkling Wines.
George West, best Sherry and Port Wines.
Dressel & Co., best Wine from Mission Grape.
Chenery, Souther & Co., best exhibit of Whiskies.
M. Keller, best exhibit of Wines and Brandies.

SEC. B.—Daniel R. Provost, pure Cider Vinegar.
Erzgraber & Goetjen, Oregon Champagne Cider.
Wiggitt & Lupton, Ginger, Spruce and Root Beer.
Swan Brewery Company, California Ale and Porter.
Daniel R. Provost, California Grape Wine Vinegar.
R. & F. Tooth & Co., (Sydney), Pale and XXX Ale.

CLASS 36.

William M. Boyd, California Yeast and Baking Powder.
W. H. Jessup & Co., Eureka Match Factory, California Block Matches.
John F. Snow & Co., Dyed and Cleaned Goods.
J. F. Fugazi, Hair Oils and Dyes, Pomades and Perfumery.
Fishbeck Soap Company, Chemical, Olive and Family Soap.
Hucks & Lambert, H. & L. Axle Grease.
James G. Steele & Co., Pharmaceutical Preparations.
F. B. Taylor, Downer's Machinery Oil.
Standard Soap Company, Fancy and Domestic Soaps.
California Bleaching Soap Company, Hall & Wagner's Bleaching Soap.
California Chemical Paint Company, Averill Chemical Paint.
L. M. Gautier, Blankets and Woolen Goods Cleaning.
Crane & Cording, Sulphate of Copper.
Painter & Calvert, Pharmaceutical Preparations.
George C. Thompson, Mineral and Soda Waters.
Pacific Oil and Lead Works, Linseed, Cocoa-nut and Castor Oil.
Mosheimer & Stevenot, California Borax.
Henry Lake & Co., Shoe Blacking.
W. Goldstein, Case of Perfumery, California manufacture.
W. H. Stearns & Co., California Honey and Beeswax.

CLASS 37.

C. H. Gruenhagen, Wire Work.

PREMIUMS AWARDED TO THE PUBLIC DAY SCHOOLS.

SILVER MEDALS.

Fannie Hawley, Rincon School, Landscape Drawing.
Ella Whelan, Oakland High School, Marine Drawing.
Mary Rush, Denman Grammar School, Fruits and Flowers.
Morris Marcus, Lincoln School, Map Drawing.
Lillie Hardy, Oakland High School, Animal Drawing.
Emil Roturier, South Cosmopolitan School, Heads and Figures.
Eva St. John, Denman Grammar School, Flowers and Fruits.

BRONZE MEDALS.

J. K. Magagnos, Mechanical Drawing.
Nellie Caldwell, Denman Grammar School, Landscape Drawing.
Annie Shine, Oakland High School, Landscape Drawing.
Alice Hardy, Irving Grammar School, Oakland, Marine Drawing.

Ida Smith, Denman Grammar School, Marine Drawing.
Emma Divine, Denman Grammar School, Flowers and Fruits.
Ella Hopps, Denman Grammar School, Flowers and Fruits.
Lola Robinson, South Cosmopolitan School, Map Drawing.
Walter V. Mulvey, Washington Street School, Map Drawing.
Emma Buel, Oakland High School, Animal Drawing.
Ella Hopps, Denman Grammar School, Heads and Figures.
Helen Blakeslee, Oakland High School, Heads and Figures.
Lillie Hardy, Oakland High School, Heads and Figures.
Eva Edwards, Denman Grammar School, Flowers and Fruits.

DIPLOMAS.

John W. Holt, Architectural Drawing.
John C. Kloos, Architectural Drawing.
Emma Wielheimer, South Cosmopolitan School, Landscape Drawing.
Eliza Mury, South Cosmopolitan School, Landscape Drawing.
Isa V. Ellis, Broadway School, Landscape Drawing.
Gussie Michelson, Irving Grammar School, Oakland, Landscape Drawing.
Emma Rudolph, Oakland High School, Landscape Drawing.
Mary Selfridge, Irving Grammar School, Oakland, Landscape Drawing.
Maria Strange, Denman Grammar School, Landscape Drawing.
Luela Randolph, South San Francisco School, Landscape Drawing.
William M. Wade, South San Francisco School, Landscape Drawing.
Annie Shine, Oakland High School, Landscape Drawing.
Rosa Mathews, Oakland High School, Marine Drawing.
Eva Edwards, Denman Grammar School, Flowers and Fruits.
Emma Divine, Denman Grammar School, Flowers and Fruits.
Lucy Thompson, Denman Grammar School, Flowers and Fruits.
Belle Ford, Denman Grammar School, Flowers and Fruits.
Ida Killey, Denman Grammar School, Animal Drawing.
Hattie Cooper, Denman Grammar School, Animal Drawing.
Ira W. Emmons, Irving Grammar School, Oakland, Animal Drawing.
Charles Beintz, Irving Grammar School, Oakland, Animal Drawing.
Helen Blakeslee, Oakland High School, Heads and Figures.
Mary Clow, Oakland High School, Heads and Figures.
Hattie M. Tuttle, Shotwell Street School, Heads and Figures.
Angela Ghiradelli, Oakland High School, Heads and Figures.
Ada Smith, Denman Grammar School, Heads and Figures.
Mary Bratten, Denman Grammar School, Heads and Figures.
Ora Smith, Denman Grammar School, Heads and Figures.

PREMIUMS TO THE PUBLIC EVENING SCHOOLS.

SWEEPSTAKE PREMIUM.

William Byrne, best Architectural Drawing, a set of drawing instruments of the value of $75, to which is added, by the President of the Mechanics' Institute, $50 in gold coin.

SILVER MEDALS.

G. Constant Meese, best Mechanical Drawing.
Frank Walker, second best Architectural Drawing.

BRONZE MEDALS.

John W. Newcum, third best Architectural Drawing.
Henry Raschen, Ornamental Drawing (Fruit Panel.)
J. A. Seckal, Pen Drawing of a Saddle.

DIPLOMAS.

Robert Coulter, Drawing of a Turbine Water Wheel.
Edward Kalben, Drawing of a Composite Cap.
J. Noble, Ornamental Drawing.
Charles A. Wagner, two Enlarged Ornamental Vases.
Emil C. Fety, Drawing of a Young Girl.

PREMIUMS AWARDED TO APPRENTICES.

SILVER MEDALS.

G. A. Bordwell, Isometrical Architectural Drawing.

BRONZE MEDALS.

Jacob Grunnagle, Drawing of a Steam Fire Engine.

DIPLOMAS.

E. H. Elmquist, Drawing of a Locomotive and Tender.
J. W. Lunny, Glass Sign Work.
Frederick Brown, Wax Work.
August Golley, Miniature Working Steam Engine.
Leo Morgan, Small Oscillating Steam Engine.

DIVISION I.

RAW MATERIALS.

CLASS I.—MINERAL PRODUCTS.

Although the display in this important department was respectable, and indeed highly creditable to the exhibitors, especially in the quality of the specimens, many of which were rich and rare, the extent was nothing like so great as was reasonably to have been anticipated. Since the last Exhibition, new, extensive and rich mineral regions have been discovered, and are in a rapid course of development. As through increasing railroad facilities, the transportation of samples of good quality and sufficient in quantity to demonstrate the character, and give some idea of the extent of these new mineral discoveries, have largely increased within the past two years, it was confidently anticipated that a much larger exhibit would have been made in this department. In view of this condition of affairs a liberal premium was offered by the Institute for the "best collection and largest variety of metals of the Pacific Coast." It is true that the extent of the mineral region of the Pacific represented was large, varied and diversified—many of the most important districts comprised within its limits being represented; enough being shown to fully demonstrate the fact that the vast and inexhaustible mineral resources of this Coast are barely at the outset of their most successful development. The rich placers, which caused the rush to these shores from all parts of the world, consequent upon the discovery of the gold at Sutter's Mill in 1848, having some years been generally regarded as measurably exhausted, were gradually abandoned and turned over to a class satisfied

with a less remunerative pay than their more fortunate predecessors. The "Surface Diggings," as they were familiarly termed, having, in many instances, been merely "skimmed" over by their original possessors, the more patient perseverance of those who have followed in their footsteps has, in many instances, been richly rewarded; and instances of "rich strikes" are even in these latter days of not unfrequent occurrence. It is a fortunate provision in the economy of nature that our country differs materially from those dependent upon their mineral resources alone. While many of the rich regions, once famed for their products of the precious metals, have with the exhaustion of their treasures, become measurably depopulated, and gone into hopeless decay, the unrivalled agricultural resources of our own and adjacent States and Territories, with their facilities for manufacturing, have steadily brought about a diversity of occupation and remunerative employment of capital, fully demonstrating the fact, that while the business of mining is permanent in its character, and must ever remain a permanent interest of our people and a controlling element in their success, it must fairly divide the honors and emoluments with the kindred interests of the arts of civilization.

One of the most important incidents attendant upon the Exhibition of the rich mineral products, which it has been the endeavor of the Institute to lay before the public, has been the introduction of large amounts of capital from abroad, so essential in the development of our inexhaustible resources in this important department. It having been clearly demonstrated that a more profitable field for investment, promising a more certain remunerative yield for the large amounts employed, is nowhere else to be found, millions of capital, most of it from foreign countries, have been steadily diverted into this channel; and during the past year extensive sales of mines, both in our own State and in the adjacent districts more recently discovered, have been made to purchasers in the generality of instances from abroad. Without invidious distinction, prominent among these may be named the Sierra Buttes Mine, which for a long series of years yielded such a handsome revenue to its individual owners, who, after having amassed princely fortunes from this source, were induced to sell to English capitalists at a figure approximating near a million of dollars. The rich pay rock of this mine is inexhaustible in extent, and the Company organized by its purchasers have gone to work to develop its resources in the fullest and most thorough manner, regardless of the expense involved, knowing that a rich return will be made compared with the amount involved. Other no less important sales to parties similarly situated have been made in the Gold Quartz Mining Districts of California, North and South, and in the silver regions of Nevada and Utah, from which latter mines a number of specimens were forwarded to the Institute Exhibition. This attraction of capital to the sources named is in a great measure to be attributed to the efforts made to disseminate the truth in regard to our mineral resources, and to demonstrate the facts by undeniable ocular proof.

Another impetus has been given to this class of mining by the constantly increasing facilities for the successful and more economical processes of working the great varieties of mineral products with which our country abounds. What are commonly denominated "Rebellious Ores," although rich in the precious metals and inexhaustible in extent, especially in the southerly mining portion of our State, but which have hitherto been neglected on account of the great expense of reduction caused by base combinations, are gradually being brought to yield to processes by which they are made to return a handsome profit. New modes of reducing the rich sulphurets of the Gold Quartz Mines of the North, which have so long resisted the efforts of science and skill, showing a profitable marching, are being gradually brought to light, and improved smelting furnaces and kindred apparatus are pouring a flood of base bullion from the inexhaustible supplies of argentiferous galena lining the interior of the extreme mountain range of our southernmost border. Hundreds of tons of these crude ingots have been shipped from the Cerro Gordo Mines, in the Owen's River Region, to San Francisco for refining, during the past year. With the increased development of this class of mines, increased facilities, for the reduction of the ores and the refinement of the products, are required, and means should be taken to divert to home channels the shipment of mineral to distant points abroad at an enormous expense. Although the common remark, that mining on the Pacific

Coast is still in its infancy, is undoubtedly true, yet economy in process and system in the mode of working has taken the place of wasteful extravagance and the useless outlay having their origin in the criminal recklessness and culpable ignorance of times, happily for all interested, forever past and gone. If the primitive Mexican arrastras, for the saving of the gold, was too slow for modern ideas of progress, it was safe, sure and economical. Let anyone interested make the trip through certain portions of California and mark the monuments to the extravagance and reckless policy alluded to, to be seen in the shape of abandoned mills and portions of dismantled machinery, costing millions of dollars, and it will be no longer a marvel to him that the march of mining has so long been retarded. The errors of the past have fortunately been abandoned, and a new and more auspicious era has fortunately dawned upon us. Let former failure be the guide to success in the future. The sources from which these paramount evils have had their origin is so plainly pointed out in the Report of the Mining Commissioner to the General Government in 1868, that we cannot forbear embodying them in this connection as in every way applicable to the subject:

"Many of those old enterprises have not yet become and never will become profitable, but of the quartz mills built within the last four or five years the successful proportion is much larger than before 1860. No business offers greater facilities to ignorance and folly for losing money; and fortunately those engaged in it had no experience, and were led by their presumption into gross blunders in both mining and milling.

"The greatest common blunder in quartz mining and the most common error, in early times as well as in our own days, has been the erecting of a mill before the vein was well opened and its capacity to yield a large supply of good rock established. The commission of this blunder is proof conclusive of the utter incompetency of its author to have charge of any important mining enterprise. If there were any possibility that it should in some cases lead to considerable profit, there might be an excuse for it; but there is none. It never pays. All the chances, including that of utter failure, are against it.

"The next blunder was, that the difference between a pocket vein and a charge vein was not understood; and the existence of rich specimens was considered high proof of the value of a mine, whereas, among experienced quartz miners, it excites their suspicion and distrust. Nine-tenths of the lodes which yield rich specimens do not pay for milling. West Point in Calaveras, and Bald Mountain in Tuolumne, the richest pocket districts in the State, are not to be compared for yield with Sutter Creek or the Sierra Buttes, where there is scarcely a passable specimen in a thousand tons."

The number of quartz mills in operation in the State of California is estimated at 330, and the quantity of the rock crushed in the year at 1,045,791 tons.

The Selby Metallurgic Works of San Francisco, although said to be far more extensive than any other on the Continent, are far from adequate to supply the demands in this department; and while it is designed to make still further additions to this establishment, the extensive original outlay proving in the highest degree remunerative, it is to be hoped that in view of the largely increasing want in this particular other capitalists may be induced to embark in this needful and profitable enterprise. The product of these extensive works, for the year 1870, amounted to $1,500,000, which it is anticipated will be increased to another million the present year (1871). The gold and silver included in the product named amounted to $800,000, and of the lead produced from four to five hundred tons are shipped monthly to the East, about one hundred tons per month being required for home supply. These works were completed at a cost of something like $450,000, and give steady employment to one hundred and twenty men.

The samples of salt exhibited were in the highest degree creditable to this important branch of manufacture; and although but two exhibits of petroleum were made, it is to be hoped that measures will soon be taken to develop the immense resources of our State, both North and South, in this particular, to a much fuller extent than has hitherto been the case. There would seem to be no good and sufficient reason why our people should import so largely of a valuable and useful article, which is so abundant at home, and only requir-

ing the requisite refining process to be in all respects equal to that furnished from abroad. Parties at Santa Barbara are producing on a limited scale from the crude product which exists in that region, in inexhaustible quantities, an article, the burning qualities of which, it is claimed, are decidedly superior to those of the imported article.

Since the decline in the prices of copper some years since, previous to which large quantities of the product of the rich mines at Copperopolis were shipped at handsomely paying rates to the distant reduction works at Swansea, in Wales, this interest although rich deposits exist in various and easily accessible portions of the State, has been measurably abandoned for the present. It is to be hoped that such a state of circumstances will arise as to give it renewed activity and consequence.

But little has been done thus far in the working of the valuable tin ores found in paying quantities in the southern part of the State, in the counties of Santa Barbara and San Bernardino. Recent rich discoveries of the existence of this ore are said to have been made in the vicinity of Ogden, on the line of the Pacific Railroad.

VEGETABLE PRODUCTS.

In this department, the most important and interesting display made was that of the samples of cotton from California and Utah, the specimens exhibited proving that the culture of this great staple on this portion of the Pacific Coast is no longer a doubtful experiment. The efforts of Col. J. M. Strong, who is largely engaged in the culture of cotton in the rich region of Merced county, have been crowned with the fullest success, and his crop the present season will, it is estimated, yield a return of a bale and a half to the acre, which is above the average rates of the cotton growing region of the Southern States. This gentleman, who has for some time past, been busily engaged in securing his extensive crop, received from the East a short time since a "Gin," with all the necessary apparatus for cleaning, which removes every obstacle in the way of turning out an article equal to that produced in any portion of the world. With this successful culture, it is anticipated that the important business of the manufacture of cotton commenced and successfully prosecuted here some years since, but measurably abandoned, or the machinery diverted into other channels, on account of the want or scarcity of the raw material, will be revived and become one of the important industries of the State.

The interesting and valuable essay upon this subject, which is given in another portion of this volume, will give the readers an adequate idea of the mode and extent of cotton culture in California.

The report upon the Ramie Plant, the culture which has proven a success, and is attracting much interest among the agriculturists of our State, will be read with interest. The specimens exhibited gave the fullest proof that the soil and climate of California are peculiarly adapted to the successful cultivation of this product, which is at this time attracting much attention in all portions of our country. Extensive preparations have been made by Mr. Finch, the successful exhibitor of this product, the Pacific Ramie Company, and individual cultivation. Through the liberality of one of our citizens, a quantity of plants have been distributed among the farmers of this portion of our State for the purpose of testing and fully establishing its merits. The great drawback has hitherto been the want of machinery for the proper preparation of the fibre. When it is known that the same difficulties originally attached to the preparation of Cotton, Flax and Hemp for successful manufacture, there can be no doubt that the inventive genius of the age will speedily remove this obstacle, and of this fact the machine exhibited in this connection gave demonstrative evidence. It is an indisputable fact that the invention of the Gin, for cleaning the great staple of the South, at once more than doubled the value of the cotton lands of the Mississippi Valley. With the enterprising spirit characteristic of the present age, no ordinary limit confines the scope of human ingenuity.

The samples of Flax, Cereals, Gums and other products in this department sent to the exhibition from New Zealand were highly interesting as among the staple products of that region. Although Flax is cultivated to a certain

extent in portions of our State, the product is not so large as circumstances should warrant. An extensive manufactory of Linseed Oil and all the modern improvements and appliances adapted to this purpose, having been in successful operation for a number of years, has demonstrated that this crop can be profitably raised for the seed alone. It has hitherto been the case, that our farmers have been too generally prejudiced against a diversity of crops. They are, however, gradually becoming convinced of their error in this particular.

The diversity of the exhibits under this head in the Japanese Department of the Exhibition was of great interest, and attracted much attention for the ingenuity and skill displayed.

ANIMAL PRODUCTS.

One of the most important exhibits in this department was the display made of Silk Cocoons, and the exemplification of the first process in the manufacture of the fibre produced. These were especially interesting as exhibiting in its infancy a department which is evidently destined to become before many years one of the most important industries of the State. Upon a full and fair trial, it has been clearly evinced that the Mulberry nowhere flourishes more luxuriantly, or can be more economically produced than in California,—and no climate is better adapted for the healthy growth of silk worms. This has proven to be especially the case in the mountain region of our State; and in the counties of Nevada, El Dorado and other similar localities large plantations of Mulberry have been made, with the intention of entering upon the culture of silk upon the most extensive scale. The different varieties of cocoons produced are said to be nowhere surpassed; and such is their reputation abroad that parties engaged in the silk growing districts of France have, within the past two years, imported their stock of silk-worm eggs from California. Everything is favorable to the success of the silk business in this portion of our country, and the friends of the enterprise are sanguine in their expectation that before many years have elapsed the product of the silk worms of California will rival the most elegant fabrics of Lyons or the gorgeous productions of China.

As a highly interesting illustration of the successful prosecution of the first, and a most important branch of this manufacture, as demonstrated in the Exhibition, we give place to the following graphic description, published in the *Scientific American* of November 4 :

"SILK REELING IN CALIFORNIA.

"At the recent Fair in San Francisco a small space in one of the galleries of the Pavilion was devoted to Silk, and this was occupied by a reel, the office of which was to unwind the fibres from the cocoons. This was of much interest, and while at work was the centre of an admiring group of spectators. The operation was conducted by a California lass, who took real pride in her occupation and showed great skill. The cocoons, which look like large peanuts, were put into a vessel of boiling water which stood in a small furnace; the furnace itself being set below or rather in front of a small table on a level with the operator, as she sat in a low chair. The action of the hot water, in a few minutes, loosened the gum that in the natural condition cements the fibres of the cocoon. This done, the girl taking a brush in one hand stirred the cocoons about with it, until the requisite number of fibres were detached at their ends and clinging to the brush. From this they were quickly brought together to form a thread, passed through a fixed guide or staple at the opposite edge of the table; from this through a staple on a reciprocating bar and thence to the reel which was revolved by a small boy; a second thread was formed in the manner and in the same way connected with the reel. As the reel revolved the fibres were drawn or unwound from the cocoons which danced about in the boiling water, united in the two threads and conducted to the reel upon which they were distributed by the vibratory movement of the bar previously mentioned. The two threads in passing to the reel were made to cross each other at an angle of about thirty degrees. This was the distinguishing characteristic of the new invention, and the advantages claimed for it is that the two threads, in rubbing each other as they pass to the reel, cause

the gum to stick more closely together and consequently secure a smoother and firmer thread. After certain lengths of the two threads were wound upon the reel, its motion was stopped and the threads were severed from it, and the two skeins of raw silk, bright yellow or lighter colored, according to the original tinge of the cocoons, were slipped from the ends.

"The peculiar skill required from the attendant is shown in keeping the threads continuous as the fibres wind off and leave the cocoons, it being necessary to add the fibre from a new cocoon at the instant the fibre from the previous one is exhausted. The fibres were, of course, too fine to be seen at the distance of more than a few inches; and while the operator was attending to her work, it seemed as if her fingers were flying in the weaving of an invisible web."

REPORTS OF COMMITTEES ON DIVISION I.

CLASS 1.

MINERAL PRODUCTIONS.—ORES, ROCKS, EARTHS, SALTS, COALS, BITUMEN, Etc., Etc.

47. Henry G. Hanks, case of Minerals, Fossils and Ores.
1443. Henry G. Hanks, seventeen cases containing Minerals, Ores and Fossils, arranged by C. H. Denison.
1670. J. H. Gilmore, specimens of Minerals from Cerro Gordo, Cal., and Nicaragua.
1671. S. D. McLennon, specimens of Minerals from San Diego, Cal.
1672. Ira H. Reed, specimens of Minerals from Calaveras co., Cal.
1673. W. McElveny, specimens of Minerals from Trinity co., Cal.
1674. T. P. Drogge, Specimens of Minerals from Placer co., Cal.
1675. M. W. Belshaw, specimens of Minerals from Cerro Gordo, Cal.
1676. H. W. Murray, specimens of Minerals from Colorado and Utah.
1677. O. C. Ormsby, M. D., specimens of Minerals from Brigham City.
1678. John W. Young, specimens of Minerals from Salt Lake City.
1686. W. C. Hendrie, specimens of Minerals from Madison, Montana.
1687. A. S. Gould & Son, specimens of Minerals from Utah.
1688. Samuel Purdey, specimens of Minerals from Utah.
1689. Joseph Perrin, specimens of Minerals from Grass Valley, Cal.
292. Carmen Island Salt works, samples of Rock, Table and other Salts.
1307. Sayward & Fonda, samples of Mount Diablo Lime.
430. J. A. Plummer, samples of California Salt.
1182. Mrs. R. M. Chamberlain, specimens of Petrified Wood and Minerals.
1693. Charles Forma, specimens of Minerals from Lincoln, Nevada.
1694. Charles Green, specimens of Minerals from Baker City, Oregon.
1695. W. R. Reynolds, specimens of Minerals from Ogden City, Utah.
1698. A. S. Eisenberg, specimens of Minerals from Elko co., Nevada.
1699. William Bennett, Concentrated Ores, Krom's Process.
1700. C. S. Miller, specimen of Silver Ore, 136 pounds, Idaho.
1701. Unknown, specimens of Mineral, Elko co., Nevada.
1702. George Carter, specimens of Mineral from Elko co., Nevada.
1703. Harris & Leveridge, specimens of Minerals from Elko co., Nevada.
1704. T. J. Reilly, specimens of Minerals from Elko co., Nevada.
1705. Charles Gentile, specimens of Minerals from Arizona.
1706. Unknown, specimens of Mineral from Yreka, Cal.
1707. C. Y. Shelton, specimens of Mineral from Yarapai, Arizona.
1708. John Harrack, specimens of Mineral from Sherman, Wyoming T.
1709. C. R. Bartlett, specimens of Mineral from Sherman, Wyoming T.

1666 to 1668, W. H. V. Cronise, display of Ores, Minerals, etc., from California, Nevada and Idaho.
1270. California Wood Preserving Company, samples of Petroleum.
1558, 1559, 1560, 1561, 1563, 1565, and 1516, specimens of coal from each district of Japan—specimens of copper, silver and gold ores, specimens of crystals, etc.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City and County of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 1, of Division 1, recommend that the following Premiums be awarded:

A Silver Medal to the Carmen Island Salt Company for the best display of Dairy, Table and other Salt. (Awarded a Silver Medal.) Also that the Society's Diploma be awarded to Henry G. Hanks, for the most complete collection of Ores and Minerals. (Awarded a Silver Medal.)

WM. ASHBURNER.
ALMARIN B. PAUL.
W. W. HANSCOM.

DIVISION I.—CLASS 2.

VEGETABLE PRODUCTIONS.—CEREALS, SPECIMENS OF WOODS, FIBRES, ETC.

22. R. and F. Tooth, sample of Australian Malt.
363. W. S. King, sample of California Cotton.
562. Frederick Nanns, sample of Flax and Hemp.
879. Diez Bros., sample of Cigars.
1242. D. J. Cannon, sample of Sunnyside Chewing Tobacco.
1680. John W. Young, sample of Cotton from Utah.
14. John Ross, specimens of imitations, Woods, Marbles and Mosaics.
693. Caspar Romer, specimens of Polished Woods.
694. J. S. Finch, specimens of Ramie Plant and Fibre.
699. G. Herzog & Co., Eureka Vegetable Hair.
1125 to 1132, inclusive, J. L. Macfarlane, Auckland (N. Z.) four cases of scraped and sifted Gum, case of clean small chips Gum, case of clear sifted Gum, four bales Flax, two bales tow, six sacks of Oats from New Zealand.
1730. Col. J. M. Strong, samples of Cotton from Merced River Ranch.
1496. Jacob Strahle & Co., samples of California Woods.
1755. Page & Crowell, samples of Sandwich Island Cedar.
1756. Page & Crowell, samples of California Sugar Pine.
927. S. F. Weeks & Co., Bale of best Navy Oakum.
1556, 1558, 1564, 1569, 1570 and 1630, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Division I., Class 2, submit the following report:

REPORT ON RAMIE.

The Pacific Ramie Company exhibits a single plant of this new textile. Like all the nettle family, to which it belongs, it makes a very vigorous growth in our soils. It is an average sample of some hundred thousand plants originally set out by Joseph Graham, J. S. Finch and William Meek, near Haywood, Alameda county. Besides these, Mr. Mentzer of San Bernardino has some thousands in luxuriant growth, and there are probably some twenty thousand more scattered throughout the State by Henry Hughes. To these five gentlemen we owe the first introduction of this interesting plant into California, which we have reason to feel assured is destined to become a leading production of our agriculture.

From experiences with the plants now in growth we can count on two crops a year, making one ton of clear raw fibre to the acre, worth $350 in England. The plant is perennial and is propagated from roots, one planting lasting for years.

After the first year the cost of cultivation is small, for the vigorous plant outgrows all weeds—from twenty-five to one hundred stalks springing up from a single root. The bark yields the fibre, which is of great strength and from which a fine and durable quality of dress goods, usually interwoven with wool or silk, are manufactured. It takes a permanent dye.

Up to a recent date the process of separating the fibre was expensive, but the Lefranc Brake exhibited at our Fair does the work cheaply and effectually, doubling the value of the crop and freeing our farmers from all risk in its cultivation. The only safe place to grow it here is in moist bottom lands.

We recommend the award of the first Gold Medal of the Institute to the Pacific Ramie Company for the best pioneer plantation of Ramie.

J. S. SILVER, Chairman.

NOTE.—The plant referred to in the foregoing Report was exhibited by J. S. Finch of Alameda county, to whom a Silver Medal was awarded for the exhibit—Mr. Finch having merged his enterprise into that of the Pacific Ramie Company.

Entry No. 13, Catalogue No. 22, Australian Malt, a small sample without a history; looks well.

Entry No. 158, Catalogue No. 879, the only Cigars in the American Department; a small exhibit without a history; looks well.

Entry No. 702, Catalogue No. 1242, Sunnyside Tobacco, of which a few leaves only are exhibited; no history.

Entry No. 806, Catalogue No. 1680, Utah Cotton; a small sample, the best exhibit; no history.

Entry No. 858, Catalogue No. 1730, Merced Cotton; two samples; gives promise of having a staple production; no history. Diploma awarded to Col. J. M. Strong.

Entry No. 793, Catalogue No. 1498, California Woods; best and excellent exhibit. Second premium recommended.

Entry No. 334, Catalogue No. 699, Eureka Soap-plant Hair; the only exhibit. Diploma awarded to J. Herzog & Co.

Entry No. 559, Catalogue Nos. 1125 to 1132. J. L. Macfarlane exhibits, as products sent from New Zealand, six cases of native Gums, which are of good quality and which will find a market here; also bales of Flax and Tow, coils of white and lubricated Rope, and sacks of Oats, all of which merit consideration. No history given. Diploma awarded.

Entry No. 875, Catalogue No. 1755 and 1756, Cedar Planks from the Sandwich Islands, and California Sugar Pine; samples limited.

Entry No. 329, Catalogue No. 693, a few samples of polished and other Woods.

Entry No. 233, Catalogue No. 14, twelve specimens of imitation Woods and Marbles.

J. S. SILVER, Chairman.

DIVISION I.—CLASS 3.

ANIMAL PRODUCTS.—HIDES, SKINS, WOOL, COCOONS OF SILK-WORMS, SPECIMENS OF ANIMALS, ETC.

44. Stephen Davis, samples of Cocoons, Calaveras co., Cal.
549. M. E. Austin, Case of Shells.

E. F. LORQUIN,—

1415. Stuffed Peacock.
1416. Stuffed Australian Swan.
1417. Stuffed Owl.
1418. Stuffed Avocel.
1419. Stuffed Wild Goose.
1420. Stuffed Hawk.
1421. Prepared Butterflies.
1422. Prepared Skeletons of Birds.
1423. Case of Tropical Birds.
1424. Case of California Birds.
1425. Case of California Feathers.
1426. Tail of Lyre Bird.
1427. Family of California Quails.
1428. Mountain Quails.
1429. California Robin.
1430. Parlor Group of Birds.
1431. Ruffled Grouse.
1432. California Shrike.
1433. Stuffed Scotch Terrier.
1434. Case of Shells.

1681. John W. Young, sample of Camel's Hair, from Utah.
239. F. Grüber, two cases of Stuffed Birds.
298. R. H. Guerin, Nondescript Fish in alcohol.
988. C. G. Gilbert, case of Abalone Shells.
423. J. L. Bardwell, pair of Ox-horns.
770. James Hartley & Co., specimen of Wool, "Golden Fleece."
1151. M. E. Austin, pair preserved Mexican Fish.
1754. A. A. Hazeltine, samples of Sea-shells and Coral.
831. D. Samuels, samples of various kinds of Skins, natural and dressed.

JAPANESE COMMISSION,—

1557. Specimens of dressed Hides and Leather.
1563. Candles, White wax, Dried Fish, etc.
1604. Two dressed Goat-skins.
1605. One dressed Tiger-skin.
1606. Goat-skins.
1620. Fine white Sheep-skin.

1779. California Silk Culture Company, samples of Cocoons, and Raw and manufactured Silk.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The undersigned Committee appointed to examine articles exhibited and competing for premiums at the above exhibition, in Division I, Class 3, submit the following report:

Entry No. 756, Catalogue No. 1415 to 1434, inclusive: E. F. Lorquin, makes a very interesting and highly creditable display of stuffed birds and other specimens, which merit the premium for the best display in this department.

Entry No. 253, Catalogue No. 239, two cases of stuffed birds, deserving honorable mention. Diploma awarded to F. Grüber.

Entry No. 381, Catalogue No. 988, a case of Abalone shells, very good.

Entry No. 874, Catalogue 1754, Sea shells and Coral, very good; the best exhibit of assorted shells.

Entry No. 521, Catalogue No. 770, specimens of Wool, "The Golden Fleece," the best exhibit and the only fleece in the Fair.

J. S. SILVER.
WM. RYLE.

SILK COCOONS.

We regret to announce a sad falling off from our last Fair in the exhibit of Cocoons. Silk-growing has not proved successful. Except in very few cases, there has been a complete loss of silk worms during the past two seasons throughout the great valleys, where fifteen millions of mulberry trees are growing. In the foot-hills, however, where a few persons have undertaken the culture of silk, the success has been uniform and without a drawback. Among the favorable exceptions mentioned above, in the great valleys, is one at Smith's Garden cocoonery, near Sacramento. Here, on river bottom land, Signor Consono, one of the Italian experts who came here last spring and rented several cocooneries thereabout, has made a success while his colaborers have failed. The causes for the general failure and the reasons for the exceptional successes our space will not permit us to discuss, but the conclusions which investigation induces may interest the public. We do not consider that there is cause for discouragement, but, on the contrary, we find sound reasons for hope. It is proven that the foot-hills—that is, our great mineral region on the western slope of the Sierras—are eminently adapted to silk-growing; there a worm is never lost. The success of Signor Consono on the American river bottom gives proof that there is nothing fatal in our great valley climates which skilled treatment may not counteract. If the one hundred persons who failed, in the same soil and climate, had treated their worms in the same way as Signor Consono, it is quite fair to presume they would have succeeded as well; whereas, if the Signor's cocoonery had been under the management of those who failed in the same neighborhood, no one will doubt that it would have added another to the list of failures.

Mrs. C. T. Dimon, of Grass Valley, Nevada Co., exhibits some remarkably fine cocoons—French annuals, Japanese bivoltines and Salt Lake dry neelers—all of which are excellent. They are specimens of 150,000 raised by that lady and her children, with no previous experience, and guided solely by book instructions. In the two years of her experience she has not lost a worm. This lady is desirous of finding a market for her cocoons.

Mr. Edward Muller, of Nevada, five miles from Mrs. Dimon, presents similar specimens, equally excellent, of 100,000 cocoons. In three years' experience he also has never lost a worm.

Considering that these two exhibits are of equal merit, and that they rekindle the expiring light of hope for silk culture in our State, we recommend the award to each of them of the highest premium the Institute, in its liberality, may deem expedient.

At the risk of stepping beyond its duties, your Committee offer some views which they trust may be of interest to the public.

It is an established fact there is no market for cocoons, and silk-worms' eggs are not in demand. Unless there be a change, silk culture in California will be abandoned for an indefinite period. Silk manufacturing is well established

by the California Silk Company, which buys its raw silk abroad, but would prefer that produced here. This company has reeled enough of the California product to establish its superiority over that of the Chinese and Japanese article. The proprietors of our cocooneries will have to learn to reel their own silk, in which shape it is ready for sale. The Company mentioned will take all the country is likely to produce. In all silk-growing countries farmers find it profitable to reel their cocoons, and we will find it best to follow their example. Should there be cocoons enough in the State we would advise the holding of a convention of silk-growers to consider the expediency of importing from Japan a few reelers for our instruction. The process is very simple and easily learned. In the meantime, inducements may be offered to our few successful growers to make public the secret of their success.

We have but one regularly-organized company actually engaged in growing silk, the shareholders of which are in San Francisco. The mulberry plantation is at Davisville, on the Sacramento and Vallejo railroad. Nothing can excel the thrifty growth of the trees in their extensive mulberry orchards, nor can the world show cocoons superior to those of Davisville in 1870.

The crop failed in 1871, and the cause of failure is already apparent. Everything went on smoothly as heretofore; the worms passed safely through all their moultings, and all the supposed periods of danger were at an end. Many of the worms were already among the twigs and beginning to spin their cocoons for self-entombment until their days of resurrection to winged life and connubial joys. In the month of June, there came from the North the scorching sirocco that sweeps over our green fields in growing time, ripening their products prematurely and touching the landscape with the dusky tints of autumn. The silk worms' choice of temperature ranges from 70 to 80 degrees of Fahrenheit's thermometer; it can stand 90 degrees, but at 110 degrees it wilts down and dies. Perhaps even this extreme temperature, though uncomfortable, would not be destructive if the worms were in the open air; but our manner of feeding them is in frame buildings, with an unlined shingle roof and a single board to shelter them—no regulated circulation of air, and not a tree to temper the unclouded sunshine of our summer time. In the heated term the interior of such a shell reminds you of a baker's oven. Such being the case, is it to be wondered at that the worms sicken and die from the excessive heat?

When the diagnosis is so perfect, the remedy readily suggests itself.

Silk worms require concrete buildings, with double roofs provided with air drafts, vigilantly and carefully controlled. Until these are provided we cannot count on success in growing silk in California.

REPORT ON THE TEA PLANT.

At our last Fair Herr Schell, of the Japanese Colony in El Dorado county, exhibited specimens of plants and manufactured tea. At that time success seemed assured; but untoward circumstances broke up the Colony, and its extensive tea gardens had to be abandoned. Another experiment at Calistoga failed because the plants did not reach the ground in growing condition. A second venture is now in progress of trial at that place, but we have no record of the result.

Although there are no tea plants on exhibition, we deem it of public interest to assure our agriculturists that nothing, so far, warrants distrust in the adaption of our soil and climate to the cultivation of the tea plant, especially in the foot-hills of the Sierras; but irrigation will be found indispensable.

J. S. SILVER, Chairman.

DIVISION II.

MACHINERY FOR GENERATING, APPLYING AND TRANSMITTING POWER.

As will be seen from the number of entries in this important class, there was an extensive exhibit made of all that pertains to the successful operations of all classes of steam machinery. Steam being the power mainly employed in most of the manufacturing and mining operations of our State, very naturally attracts much attention from the large class engaged in those operations, and the successive improvements in this department are watched with peculiar interest. As will be seen from the practical report of the Committee, several important improvements have been developed in the display made in this department. The age in which we live being essentially utilitarian, its spirit inclines to the encouragement of labor-saving invention, and the discovery and development of more economic modes of conducting the practical and laborious operations of life. In this department there would seem to be no fixed limit to the scope of human ingenuity, and each day brings forth some new and substantial evidence of advancement in this line. It may not be out of place to mention in this connection, that, stimulated by this pervading spirit, our own people are not behind their brethren of the Eastern side of the continent, in adding their contribution to the general collection. The Exhibition of the Institute presented many new and important features creditable to the inventive genius of our people, and the records of the Patent Office at Washington show that California, if not at the head, is by no means behind her competitors for the honors and emoluments of this important department. As the ancient axiom that "Necessity is the mother of Invention," is everywhere alike applicable, many important improvements have been called into existence here to supply some want arising out of necessities inseparable from our peculiar locality, and the exigencies which occur in the diversified operations of labor.

With the steady advance of manufactures in San Francisco has kept pace an increased demand for steam machinery; and as mining operations advance, the appliances of our numerous foundries and machine-shops are called into active operation to supply this pressing want; for in this department more especially has experience demonstrated the superiority of our artisans, and the decided advantages possessed by machinery of home manufacture over that imported from abroad.

REPORT OF COMMITTEE ON DIVISION II.

CLASS 4.—STEAM BOILERS, GENERATORS AND APPARATUS OF ALL KINDS FOR GENERATING POWER.

931. J. Martenstein, improved Water Gauge.
1451. San Francisco Boiler Casing Company, samples of non-conducting composition for coating Steam Boilers.
481. R. H. Michner, Automatic Water Regulator for Steam Boilers.

To the President and the Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 4, of Division 2, respectfully beg leave to report the following recommendations:

That honorable mention be made of Entry No. 350, Catalogue No. 931, Improved Water Guage, exhibited by J. Martenstein. Diploma awarded.

That honorable mention be made of Entry No. 453, Catalogue No. 481, Automatic Water Regulator for Steam Boilers, exhibited by R. H. Michner. Awarded a Diploma.

That a Society Diploma be awarded to Entry No. 686, Catalogue No. 1451, sample of Non-conducting Composition for Coating Steam Boilers, exhibited by the San Francisco Boiler Casing Company. The Committee consider this a very good and very durable non-conductor, and the best thing of the kind they have ever tried.

CHARLES ELLIOT.
JAMES HILLMAN.
CHARLES C. BEMIS.

DIVISION II.—CLASS 5.

STEAM ENGINES AND APPURTENANCES OF ALL KINDS.

590. Brown Valve Company, model of Double disc Watergate or Valve.
591. Brown Valve Company, model of Single disc Watergate or Valve.
592. Brown Valve Company, Fire Hydrant.
253. Risdon Iron Works, Steam Winch.
284. William Blair, model Steam Engine and Boiler.
611. David Stoddart, Pickering's Steam Engine Regulators.
632. Berry & Place, Automatic Stop Governor.
633. Berry & Place, Sturtevant's Blowers.
642. F. L. A. Pioche, Gas Engine.
643. William Deacon, 8-inch Steam Engine.
1008. Henry Rose, Self-indicating Lubricator.
1043. John Quigley, Self-acting Lubricator and Journal-box combined.
1060. W. T. Garratt, Lubricator for Steam Engines.
1082. W. I. Tustin, two large working Wind-mills.
1084. W. I. Tustin, model of Wind-mill.
698. N. Siebert, Eureka Lubricator.
1450. Pacific Iron Works, Steam Engine.
1452. Miner's Foundry, Shrieve's Improved Governor.
433. W. E. Philips, machine for Oiling Crank-pins.
800. Charles Otto & Co., small Steam Engine.
1796. Marsh, Pilsbury & Co., Sturtevant's Noiseless Pressure Blowers.
1828. August Golly, Miniature Steam Engine.
1805. Leo Morgan, model of Oscillating Steam Engine.

To the Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 5 of Division 2, beg leave to report as follows:

Catalogue Nos. 590, 591, 592, Entry No. 108, Brown Valve Co. These are models of a comparatively new kind of valves for watergates and hydrants,

the obvious intention of which is to prevent the cutting of the valves and seat during opening and shutting, and to press the valve firmly to the seat when closed together, with a perfectly free water-way when open, to accomplish which the valve is comparatively free from its seat in its opening and shutting, and is brought firmly to its seat during a small fraction of the movement, when directly over the part, by means of a lever acting on the principle of a toggle—simple in construction. As tending towards the solution of the question of tight valves, which can be easily removed without liability of destruction of faces of valve, and valve with a clear open port for discharge, we award it a diploma. Recommendation of Committee adopted.

Catalogue No. 253, Entry No. 259. Risdon Iron Works. This is a good, strong, well constructed arrangement of engine, drum and gearing for general purposes, and is a creditable specimen of workmanship, without any particular new features. We recommend honorable mention. Awarded a diploma.

Catalogue No. 284, Entry No. 272. Wm. Blair. A working model of steam engine and boiler, constructed during spare hours by a painter. It is creditable to his ingenuity and deserving of honorable mention. Awarded a diploma.

Catalogue No. 611, Entry No. 287. David Stoddard. This is the well-known Pickering Governor, which gives good results in regulating the speed of steam engines. It has the fault of springs, which are liable to break during very sudden changes of load on engines; generally gives good satisfaction; is simple, and otherwise than the breakage of springs, durable. Honorable mention.

Catalogue No. 632, Entry No. 299. Berry & Place. Gardner's Automatic Stop Governor. This is intended for, and performs the office of shutting off the steam entirely from the engine, in case of the breakage of the governor, is simple and operates efficiently, although not so good a regulator as some others.

Catalogue No. 633, Entry No. 299. Berry & Place. Fan Blowers, by the well-known maker, Sturtevant. These are the best constructed machines of the kind in present use, and give the most satisfactory results in efficiency of blast and power required. Diploma recommended.

Catalogue No. 642, Entry No. 304. F. L. A. Pioche. This is the Hugen Gas Engine, a French invention of English manufacture. The power is generated by a mixture of common illuminating gas and air, which is exploded twice during every revolution of the crank shaft. The gas and air are admitted during one-half of the stroke of the piston in either direction, and exploded by means of a gas jet in the valve, supplied through a flexible pipe; the proportion of air and gas is about 14 to 1. The working speed of the engine is one hundred revolutions, and calculated horse-power, 3. Diameter of cylinder, 14 inches, with 12 inches stroke. Consumption of gas in ten hours, at the rate of 3 horse-power, about 4,200 cubic feet. The advantages claimed are absence of danger from explosion, ashes and dust, and the readiness with which it can be started. Also, that so soon as no power is required the gas is immediately cut off and no expense for fuel is incurred. The disadvantage is, that considerable skill is required to properly adjust the mixture of air and gas to produce regular work and speed, and also a continuous jar from the explosion of the gas. Also, the comparative expense of gas over coal as fuel, which will preclude its use to much extent in this country at present. Its irregularity of movement and working prevent the Committee from giving more than its claims and known disadvantages.

Catalogue No. 643, Entry No. 365. Wm. Deacon. A Horizontal Steam Engine, eight inches bore and sixteen inches stroke, built by Wm. Deacon for the California Jewelry Company. We are glad to call attention to this exhibition, as denoting especial regard which has been paid to the details of ordinary slide valve engines, in proportions of journals bearing surfaces and parts, as well as general neatness of design and finish. Diploma recommended. Silver medal awarded.

Catalogue No. 698, Entry No. 330. N. Seibert. Lubricator for Steam Engine. The principle of action in this is the difference in the specific gravity of water and oil, in allowing a gradual flow of water in the cup containing the oil,

and which, by its superior gravity, displaces and allows the latter to flow over, and through a properly arranged pipe, to the machinery to be lubricated. As an important adjunct to the economical running of steam engines, we recommend a silver medal. Recommendation adopted.

Catalogue No. 1,068, Entry No. 395. Henry Rose. This is a Self-Indicating Lubricator for steam engines, the principal parts being a cylinder, piston and rod, the latter connected by an arm to a rack, which actuates the hand of a dial, and the movements of which indicate a corresponding movement of piston and quantity of oil consumed.

Catalogue No. 1,043, Entry No. 607. John Quigley. Is a Journal Box, constructed with an oil space around it, and from which the oil is carried by capillary attraction by a collar of suitable material. No particular advantages noticed over others in common use.

Catalogue No. 1,060, Entry No. 621. W. T. Garratt. This is the same in substance as 698, although by another exhibitor, and needs no further mention.

Catalogue No, 1,082, Entry No. 639. W. I. Tustin. This exhibit illustrates one of the most important sources of small power in this vicinity, and its construction, proportion, and arrangement of detail, with its simplicity and ease of adjustment, show it to be the result of careful study and extensive experience. Diploma awarded.

1,084. Model of 1,082.

1,305. Same exhibitor as 698.

Catalogue No. 1,452, Entry No. 687. Miners' Foundry. Shrieve's Improved Governor Automatic Stop, as a stop movement, seems generally to act with efficiency, although the delicate spring-catches are liable to accident in many places where governors are required to be placed. A doubtful claim is the position of the joint of the arm, as one of the many studies to improve the action of Watts' governor. Considered a failure.

Catalogue No. 433, Entry No. 423. Wm. Phillips. A very good mechanical arrangement for oiling the crank pins of engines in a cleanly and economical manner, consisting of a stand placed on the frame of an engine, in line with the crank shaft, and carrying a small hopper or cup, from the bottom of which projects a small hollow shaft in line with the axis of the crank shaft, and which also acts as a pivot or journal for a hollow arm which is attached to the end of the crank pin by a hollow stud, the crank pin having a hole through the axis to the centre of its journal, and then to its journal surface. Through the cup, hollow pivot arm and crank pin the oil is carried during the revolutions of the engine, and the quantity is adjusted by means of a cock in the cup above the hopper, so that oil may be fed in any desired quantity. Diploma awarded.

Catalogue No. 800. Charles Otto & Co. A small Steam Engine, showing a desire to make a pleasing toy rather than to illustrate any new principle.

Respectfully submitted,

W. W. HANSCOM,
H. B. ANGELL.

DIVISION II.—CLASS 6.

MACHINES FOR TRANSMITTING POWER.

536. A. S. Hallidie, Patent Endless Ropeway.
587. A. S. Hallidie, Patent Grip Pully.
109. George A. Fuller, model of Sheave with anti-friction bearing.
1083. W. I. Tustin, Horse Power.
1110. Dr. A. Blatchly, Universal Gear.
1306. Atwood & Bodwell, Little Giant Horse-power.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

We the undersigned Committee, Division 2, Class 6, beg leave to make the following report:

Entry 90, Catalogue 536, Wire Rope Railway, by Mr. Hallidie, is a working sized model, substantially erected, with curves, elevations, depressions, ore buckets, ore sacks, passenger cars, freight hooks, etc., showing to advantage an adaptability to general use, when other conveyances cannot be erected.

The patent Grip, is an important part of Wire Railways, ensuring the rope against slipping, and offering no obstruction to the hangers as they pass around the pulley.

After examining the various parts of the machinery, we consider it well adapted to the use for which it is intended, and that its arrangement shows a high degree of mechanical ability and inventive genius, and recommend that Mr. Hallidie be awarded a Diploma.

Entry 656, Catalogue 1306. One of two Horse-powers exhibited by Atwood & Bodwell, and called Little Giant Horse-Power.

There is nothing particularly new in this application of horse-power. The speed is got up by means of one driving spur-wheel resting in a hollow step, of sufficient depth to give steadiness to the wheel and driving levers; this gears into another pinion and spur-wheels similarly supported, which again gears into a spur pinion and bevel-wheel, which again gears into a bevel pinion on the line and shaft of the power which is long enough to extend outside of the horse circle, and having a plate with crank-pin keyed upon its end, for working a pump or receiving a belt pulley. The proportion of driving wheel to crank is 11⅓ to 1. The only noticeable feature of this machine is the arrangement for protecting the oil and spindle from dust. We recommend that you give it Honorable Mention.

Entry 639, Catalogue 1083. One of two Horse-powers exhibited. This one made by W. I. Tustin. It is similar to the preceding, with the difference only of employing one crown spur-wheel gearing into a spur pinion, and one bevel wheel gearing into a bevel pinion on line shaft, upon which is the usual crank wheel. The crown spur-wheel has a crank fitting on an upright spindle cast into the bed, and protected from the dust by a cap or washer on the top and in the center of the wheel. This is the principal point of difference in the two machines. The motion is as 9⅓ to 1. The gearing is stronger than in the other, and is more simple in its construction. We award to this machine the preference though the distinction is so very slight that we only recommend an Honorable Mention, as in the case with the former machine.

Entry 205, Catalogue ——. An Anti-friction Bearing, constructed by placing revolving balls in a groove, cup or cylinder, on the one side, and with a groove in the shaft in the case of revolving journals, or a corresponding cap, in upright shafts. There is no doubt of the utility of this kind of bearing under particular circumstances. The general principle of this, or its applications, has not the merit of being new, but the manner of its application in the present models is neat and mechanical. We recommend that it receive Honorable Mention.

Entry 548, Catalogue 1110. A Universal Coupling, or rather a Universal Bevel Gear. This is a toothed wheel which has a round face instead of a straight piece as usual on spur gearing; the teeth are laid off on a circle, largest on the outside diameter, and decreasing in the pitch, as it rounds on the face and approaches the centre. Thus, if two are put together on their peripheries in any position, they will revolve correctly, having, however, only a point of surface in contact.

This kind of gear is applicatory for conveying power by a shaft along lines where the angles are not previously known. It is an ingenious arrangement for temporary purposes, but cannot be recommended for anything permanent. We recommend that this article may receive Honorable Mention.

F. A. HUNTINGTON.
JOSEPH MOORE.
E. O. HUNT.

DIVISION III.

MACHINERY AND APPLIANCES EMPLOYED IN MANUFACTURING AND PRODUCING.

Owing to a combination of circumstances, the display in the first class of this division, coming under the head of machinery employed in the varied and extensive mining operations peculiar to the Pacific coast, was not so extensive as that of former exhibitions, where the competition in this department was a marked and distinguishing feature. Still, a sufficient exhibit was made to exemplify a marked advance in a line so intimately connected with the increased development of the mineral resources of the country. Several important improvements connected with the crushing of quartz, the reduction of sulphurets, and other operations belonging to this branch of mining were to be found in the collection. The display of Steam and other Pumps was in the highest degree creditable to the exhibitors, and the detailed report of the Committee testing their merits will be found to be highly interesting to those desirous of information upon this subject. The Diamond, and other Rock Drills, were also an important feature in this department. The fact that during the year 1870 there were in operation in the State of California 421 quartz mills, 206 of which were driven by steam, 178 propelled by water, and 17 by steam and water combined, would indicate a large field for the use of machinery indispensable in carrying on their extensive operations. After a temporary lull in the manufacture of quartz mining machinery, a reaction has taken place during the past year, under the impetus of which our foundries and machine shops have been driving ahead with renewed activity.

A fair display was made of tools used in the working of wood and metals, which were highly creditable to the exhibitors, this important branch of manufacture being still in its infancy in California. Enough was shown to demonstrate the fact that our workmen can successfully contest the palm with the manufacturer abroad.

Although the superiority of the work turned out by the Pacific Saw Manufacturing Company has been set forth in former reports, yet, as this enterprise supplies an important want of the community, and is a credit to all concerned, it is deserving of notice in this connection. The success of the manufactory has been so thorough that from a small beginning a few years since a large number of workmen are kept constantly employed in supplying the demand; and through the aid of improvements made in machinery by the parties concerned in the manufactory, a successful competition has been steadily maintained, largely in favor of the home manufactured article over the importation from abroad.

The cultivation of the soil being one of the most prominent of the industries of our State and one that each year increases in importance, there is a steady demand and sure market, at highly remunerative rates, for every variety of improved agricultural implements; for in no section of our Union can this character of labor-saving invention be used to greater advantage and profit. It is but a few years since the enterprising farmers of California were almost entirely dependent upon importations from Eastern manufactories, at a heavy expense for all articles of this class. Experience has demonstrated that a large portion of the implements in general use can be profitably produced here; and such has been the encouragement in this department that four manufactories of this class are now in successful operation, supplying a want that has hitherto proved a serious drawback.

Prominent in the display of this portion of the Exhibition may be mentioned a number of mowers and reapers, combining all the later improvements, and especially adapted to "the lay of the land" in this region. The variety of plows, harrows, cultivators, portable and other mills, improved churns and other dairy utensils, many articles bearing testimony to the fertility of local invention, was highly respectable, both as regards quality and quantity. The array in the household and domestic department was equally encouraging in its character.

DIVISION III.—CLASS 7.

MACHINERY AND APPLIANCES EMPLOYED IN MANUFACTURING AND PRODUCING.

CLASS 7.—MINING MACHINERY, QUARTZ MILLS, ARRASTRAS, AMALGAMATING PANS, STONE CRUSHERS, PUMPS, ETC.

880. Joseph Goldman, Models of Farrar's Patent Elastic Car-wheel.
881. Joseph Goldman, Models of Farrar's Combination Packing.
882. Joseph Goldman, Four Drawings explaining the same.
1227. E. Cowan, Model of Brake for Street Cars.
151. G. D. Crocker, Trip-hammer Quartz Mill.
159. W. D. Hooker, Seven Lift Pumps.
160. W. D. Hooker, Ship's Pump.
214. C. C. Coleman, Sulphuret Saving Machine.
251. Severence, Holt & Co., Diamond Drill.
261. J. M. Thompson, Tunnel Car.
262. J. M. Thompson, Platform Car.
263. J. M. Thompson, Ballasting Car.
264. J. M. Thompson, Quartz Mill Cam.
610. David Stoddart, two Steam Pumps.
635. Berry & Place, eight Blake Steam Pumps.
636. Berry & Place, four Hooker's Deep Well Pumps.
926. Brittan, Holbrook & Co., Excelsior Pumps.
951. Linforth, Kellogg & Co., Barrel Pump.
966. Baker & Hamilton, Earl's Steam Pump.
1003. W. D. Hooker, Hooker's Patent Steam Pump.
1042. Gracier & Johnson, Patent Friction Hoist.
1067. Ætna Iron Works, Steam Water Lifter.
1074. G. A. Lloyd, four-Stamp Quartz Mill.
1303. W. D. Hooker, Double-Acting Force Pump.
1472. Linforth, Kellogg & Co., Gerrish Submerged Pump.
482. Dr. A. Blatchly, Rock Drill and Fixtures.
485. A. L. Fish, seven Knowles' Steam Pumps.
486. A. L. Fish, Water Tank.
723. J. H. Gilmore, Bolthof's Stamp Stem Guide.
1120. M. D. Laswell, Force Pump.
1177. Albert H. Law, Patent Brake for Rail Cars.
1790. Allen Wilcox, two Steam Water Lifters.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The undersigned Committee appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Division III, Class 7, beg leave to submit the following report:

Catalogue No. 880, 881 and 882, Entry No. 159. Joseph Goldman, Farrar's Elastic Car-wheel. This wheel possesses points of merit, and no doubt can be made at such cost as to bring it under the reach of ordinary practice; but it appears to us that it would be of little value where elasticity is most required, that is as a locomotive wheel. It pretends only to be a car-wheel, and as such we think it is good.

Catalogue No. 151, and 1074, Entry Nos. 231 and 633. G. D. Crocker and G. A. Lloyd. Quartz Mills on exhibition. Both seek to obtain rapid action, one by fitting springs over the stamp stem; the other by fitting the stamp to the long end of a lever; the cam working on the short end. This is called the Trip Hammer Quartz Mill. Of the two exhibited the Crocker is, in our opinion, the best. It has also the appearance of being able to stand pretty rough work, and we think it should receive Honorable Mention, which is more than the inventor claims from this Committee. [Diploma awarded to G. D. Crocker.]

Catalogue No. 214, Entry No. 244. Sulphuret Saving Machine, by C. C. Coleman. The principle embodied in this machine is good, but the Committee have not been able to find any data of its actual working. We are therefore not prepared to give any opinion as to its merits.

Catalogue Nos. 251 and 482, Entry Nos. 207 and 454. Severence, Holt & Co. & Dr. Blatchly. Two systems of rock drilling are exhibited. One is a specimen of Leschot's Patent Rotary Diamond Pointed Drill; the other is a good example of the percussion system of boring, known as the Blatchly Drill. The Committee have not been able to give the attention to this exhibit which its importance demands. In the application of the percussion drill considerable mechanical skill has been displayed; the toothed gear employed being suitable to any angle. This is of importance in mining districts. This machine is very good for light work, and can be made at small cost. We would recommend that the Blatchly Drill receive a Diploma. [Silver Medal awarded.]

From what we have seen of the working of the Rotary Drill, we have had no difficulty in coming to a conclusion regarding its merits as compared with the Percussion Drill. It is much better adapted for heavy work and deep holes. We are satisfied that they are both first-class drills in their own proper spheres. We recommend also for the Diamond Pointed Drill a Diploma. [Gold Medal awarded.]

Catalogue No. 264, Entry No. 265. J. M. Thompson. Quartz Mill Cam, made in sections. It is claimed for this cam, that it saves the labor of taking out the shaft to replace a broken cam. This would certainly be an advantage, if cams broke frequently. It is well made and looks strong.

Catalogue No. 1042, Entry No. 806. Gracier & Johnson. Patent Friction Hoist. This Hoist looks well, but the Committee have had no chance to test the efficiency of the friction break with a loaded cage.

Catalogue No. 723, Entry No. 419. J. H. Gilmore. Bolthof's Stamp Stem Guide. It appears to us that hemp or cotton packing is not the thing for a stamp stem guide; one turn too much on the screw will hang up the stamp.

Nos. 261, 262 and 263. Thompson's Patent Cars. The Committee have not been able to find any one to explain this exhibit, and as the models look too frail to be handled, we thought it better to let them alone.

Catalogue No. 1227, Entry No. 190. E. Cowan. Model of brake for Street Cars. A friction strap for a brake on cars has been often tested. They need to be oiled and the street dust soon converts them into a permanent brake.

STEAM PUMPS.

We have endeavored, in testing the various steam pumps on exhibition, to be as correct as possible under the circumstances. The only method open to us was to work each pump a given time against a certain head, taking diagrams from the steam cylinder and measuring the water discharged. We would recommend that at future tests of this kind all the pumps should be drawn from the same tank and discharge into a stand pipe, so that they might be wrought to their full capacity.

We submit the results of our labors, having tried to act honestly by each exhibitor:

Catalogue Nos. 485, and 486, Entry No. 459. Knowles' Patent steam Pump, exhibited by A. L. Fish.

[Diagrams from the "Indicator" accompanied the Committee's report, but are here omitted.]

Average Pressure	43.3
Back Pressure	3.3
Effective	40.

PISTON ROD END.

Average Pressure	47. lbs.
Back Pressure	2. lbs.
Effective	45. lbs.

Time of trial, 30 minutes.
472 cubic feet of water discharged under 93.65 feet head.
2,768,675 foot lbs. duty.
Length of stroke, 13.25 inches.
27 single strokes per minute.
Travel of piston in 30 minutes, 894.24 feet.

Area of piston, (10" D.) less ½ area of rod =	77.3 in.
Average Pressure	45.15 "
Dynamical duty of steam	3,120,982 "
Per cent. of power utilized	88.5 "
Average back pressure in steam cylinder of this pump	2.65 lbs.

Catalogue No. 1,003, Entry No. 390. Hooker's Steam Pump, exhibited by W. D. Hooker.

Average Pressure	28.8
Average back Pressure	6.5
Average Effective	22.3

PISTON-ROD END.

Average Pressure	25.2
Back Pressure	4.66
Effective	20.54

Time of trial, 30 minutes.
301 cubic feet of water discharged under 93.65 feet head.
1,761,791 lbs. raised one foot.
Length of stroke, 9"—156 single strokes per minute.

Travel of piston in 30 minutes	3,510 feet
Area of piston (6" D) less ½ area of rod =	27.4 in.
Average Pressure	27 lbs
Dynamical duty of steam	2,596,698
Per cent. of power utilized	67.9
Average back pressure in steam cylinder of this pump	5.8 lbs

No. 610. Cameron Special Steam Pump, exhibited by David Stoddart.

Average Pressure	23 lbs.
Back Pressure	2.5.
Effective	20.5

PISTON-ROD END.

Average Pressure	24 lbs.
Back Pressure	2.2
Effective	21.8

Time of trial, 15 minutes, 30 seconds.
249 cubic feet of water discharged under 117 feet head.
1,820,812 lbs. raised one foot.
Length of stroke 28″—182 single strokes per minute.

Travel of the piston in 15½ minutes	657.29 feet
Area of steam piston (14″ D) less ½ area of rod	152.36 sq. in.
Average pressure	23.5 lbs.
Dynamical duty of steam	2,303,407.
Per cent. of power utilized	79
Average back pressure	2.35 lbs.

NOTE.—This pump could only run half the time given to the others, owing to the failure of the connection between the discharge and the meter, which reduces the per cent. of duty as the others gave best results during the latter part of the trial. In the same proportion, this pump would give 83 per cent. duty.

No. 966. Earl's Steam Pump., exhibited by Baker & Hamilton.

Average Pressure	21.9
Back Pressure	8.3
Effective	13.6

PISTON-ROD END.

Average Pressure	19.8
Back Pressure	5.9
Effective	13.9

Time of trial, 30 minutes.
374 cubic feet of water discharged under 94.4 feet head.
2,006,600 lbs. raised one foot.
Length of stroke 9″—144 single strokes per minute.

Travel of the piston in 30 minutes	3,240 feet
Area of steam piston (8″ D) less ½ area of rod	49.4
Average pressure	20.9
Dynamical duty of steam	3,345,170
Per cent. of power utilized	60
Average back pressure	7.1 lbs.

NOTE.—This pump is defective in the exhaust, or the piston is very leaky.

Catalogue No. 635, Entry No. 300. Blake's Mining Steam Pump, exhibited by Berry & Place.

Average Pressure	11.
Back Pressure	2.1
Effective	8.9

PISTON-ROD END.

Average Pressure	11.6
Back Pressure	2.6
Effective	9.

Time of trial, 30 minutes.
331 cubic feet of water discharged under 94.4 feet head.
1,952.900 lbs. raised one foot.
Length of stroke 9.25—56.5 single strokes per minute.

Travel of piston in 30 minutes	1306 feet
Area of piston (14″ D) less ½ area of rod=	152.5 in.
Average pressure on steam piston	11.3 lbs
Dynamical duty of steam	2,273,310. lbs
Per cent. of power utilized	86
Average back pressure	2.35 lbs

REMARKS ON STEAM PUMPS.

In the foregoing trials it appears that the most efficient Pump on exhibition is the Knowles. The workmanship on this Pump is also very good. We would therefore recommend that this Pump receive a Silver Medal. [Diploma awarded.]

Hooker's Pump.—This is a good little pump made in San Francisco, and is worthy of Honorable Mention.

Cameron Special Steam Pump.—This is an excellent Pump for every-day work, being simple and strong, with few working parts to get out of order. It also gives a good per cent. of duty. We recommend a Diploma for this Pump.

Earl's Steam Pump.—This is a very ordinary piece of work.

Blake's Mining Pump.—This is also an excellent pump, well made, and gives a high per cent. of duty. We recommend a Diploma for this pump.

Hanscom's Steam Water Lifter.—At the request of the exhibitor, Mr. Hanscom, the Committee have made a test of this machine or pump. By introducing a float into the water cylinder, we obtained the motion for a diagram, and registering the height to which the water rose in the cylinder at every stroke, we are able thus to determine approximately the duty performed by the steam.

Mean pressure of steam from eight cards, 9.5 lbs.
Mean vacuum..... 9.5 lbs.

184 cubic feet of water discharged in 39 strokes under 29.8 feet head.
342,700 lbs raised one foot.

Area of cylinder (20¾ inch D)	338 inches.
Travel of float in 39 strokes	78.5 feet.
Mean pressure of steam from eight cards	9.5 lbs.
Mean vacuum	9.5 lbs.
Effective pressure	19 lbs.
Dynamical duty	504,127 feet
Per cent. of power utilized	67

This does not take into account the loss by the water not filling the cylinder at each stroke, the average length of stroke on trial being 24.1 inches. Thus 10″ of the cylinder has to be filled with steam at the pressure represented by the head before any work is done; but the simplicity of the arrangement will recommend it for many places where that is the chief requirement. We would recommend that the Water Lifter receive Honorable Mention.

HAND PUMPS.

We have examined the various Hand, Force and Lift Pumps which are exhibited, and would notice first the Hooker Pump, which is a new design by Mr. Hooker, of this city, of considerable merit. The valves are located in the most convenient place, and are all exposed by unscrewing one nut. The work-

manship is faultless and the pump is cheap. We recommend that Mr. Hooker be awarded a Gold Medal for this pump. [Awarded a Silver Medal.]

The Excelsior Pump is also worthy of notice, having proved itself at all times to be an efficient pump. We recommend that this pump receive a Diploma.

We have not observed anything else worthy of notice amongst the hand pumps.

We have not been able to make any tests of the Wilcox Water Lifter, the exhibitor having made no preparation for it.

G. W. DICKIE,
H. B. ANGELL,
CHAS. R. STEIGER,
W. EPPELSHEIMER,
MELVILLE ATWOOD.

DIVISION III.—CLASS 8.

METAL WORKING.

634. Berry & Place, Portable Drill.
928. Charles O. Farcoit, Universal Milling Lathe.
929. Charles O. Farcoit, Jig and Circular Saw.
1005. D. A. Faulkner, Improved Punch Machine.
1334. Nelson & Doble, Blacksmiths', Miners' and Machinists' Tools.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

We, the undersigned jurors, appointed by the Board of Managers of the Eighth Industrial Fair of 1871, to examine and adjudge articles on exhibition in Division III., Class 8, submit the following report:

634. Hardy's Portable Drill, exhibited by Berry & Place. Deserving of notice.

928. Universal Milling Lathe, of California manufacture. Deserving of commendation; and being the best article of its class, is awarded the first premium. Charles O. Farcoit, exhibitor. [Silver Medal awarded.]

929. The same person exhibits a Jig and Circular Saw—a very useful tool for brass finishers and others. Deserving special notice.

1005. Improved Punching Machine, exhibited by D. A. Faulkner. A useful tool for blacksmiths and others requiring a tool of cheap cost, needing but a small space for working. We recommend for it a Diploma.

1334. Nelson & Doble exhibits a case of well-finished Miners', Blacksmiths' and Machinists' Tools; and, as a specimen of California workmanship, is deserving of Honorable Mention. [Silver Medal awarded.]

ROBERT A. MARDEN,
WM. M. BETTS,
JOHN R. SIMS.

DIVISION III.—CLASS 9.

WOOD WORKING.

14. J. H. Bennett, Model of an Adjustable Gang Circular Saw.
265 to 273, inclusive. Pacific Saw Manufacturing Company, Saws, Saw Materials, etc.
274. Pacific Saw Manufacturing Company, Patent Stave Saw.
275. N. W. Spaulding, Patent Circular Saw.
626. Berry & Place, Band Sawing Machine.
627. Berry & Place, Self-feed, Knife Grinder.
628. Berry & Place, Saw Sharpener and Gummer.
629. Berry & Place, Planer and Knife Grinder.
630. Berry & Place, Band Saw Brazer.
631. Berry & Place, Matcher Setter.
640. A. Wolf, Wood Sawing Machine.
956. Berry & Place, Saw Table.
999. Pacific Saw Manufacturing Company, Metal, Compass, Table and Scroll Saws.
1072. P. Johnson, Portable Sawing Machine.
1079. Weister & Co., Circular and Jig Saw.
1331. J. H. Culver, Machine for Cutting Twist Mouldings.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee of Awards, appointed for Division III., Class 9, beg leave to report as follows :

To J. H. Culver, for Entry No. 674, Catalogue No. 1331, "Machine for Cutting Twist Mouldings," we recommend first premium—a Gold Medal. [Award of Gold Medal.]

To N. W. Spaulding, for Entry No. 268, Catalogue No. 275, a "Patent Circular Saw," we recommend a Silver Medal.

To Pacific Saw Manufacturing Company, Entry No. 266, Catalogue Nos. 265 to 273, inclusive, "Saws, Saw Mandrils, etc.," we recommend third premium—Society's Diploma.

To J. H. Bennett, for Entry No. 10, Catalogue No. 14, "Model of an Adjustable Gang Circular Saw," we recommend fourth premium—Honorable Mention.

To Berry & Place, for Entry No. 279, Catalogue No. 626, "Patent Band Sawing Machine," we recommend fourth premium—Honorable Mention.

To Berry & Place, Catalogue No. 628, Saw Sharpener and Gummer, we recommend fourth premium—Honorable Mention.

To Berry & Place as follows :

For Catalogue No. 639, Planer and Knife-Grinder;
For Catalogue No. 627, Self-feed Knife-Grinder;
For Catalogue No. 630, Band Saw Brazer;
For Catalogue No. 631, Matcher Setter—we recommend fourth premium—Honorable Mention.

To A. Wolf, for Entry No. 302, Catalogue No. 640, "Wood Sawing Machine," we recommend fourth premium—Honorable Mention.

To Berry & Place, Entry No. 360, Catalogue No. 956, "Saw Table," we recommend fourth premium—Honorable Mention.

To Pacific Saw Manufacturing Company, for Entry No. 387, Catalogue No. 999, "Metal Compass, Table and Scroll Saws," we recommend fourth premium—Honorable Mention.

To Weister & Co., for Entry No. 636, Catalogue No. 1079, "Circular and Jig Saw," we recommend fourth premium—Honorable Mention.

JOSEPH GOODRIDGE,
HOWARD CHAPMAN,
B. H. FREEMAN.

DIVISION III.—CLASS 10.

SEC. A.—PLOUGHS, HARROWS, HARVESTERS, THRESHERS, HAY PRESSES, WINE PRESSES, ETC.

15. G. A. Lloyd, model of Hay Press.
26. Linforth, Kellogg & Co., Mower and Reaper.
27. Linforth, Kellogg & Co., Mower.
35. E. Groat, six Improved Eureka Churns, different sizes.
89. Hawley & Co., Clipper Self-Raker and Reaper.
90. " Clipper Mower.
91. " three Plows.
92. " two Feed Mills.
93. " one Hill's Lawn Mower.
1214. Mooney & Lloyd, Gopher Trap.
1249. Howell & Low, Harvester.
1256. J. K. McDonald, model Grape-vine Gang Plow.
1290. Thomas B. Park, Double-action Churn.
110. J. H. Andrews, Gang Sulky Plow.
111. J. H. Andrews, a double Sulky Plow.
113. M. Keller & Co., Grape Crusher.
123. M. C. Hawley & Co., Buckeye Self-raking Reaper.
124. " Deere's Walking Cultivator.
125. " six Bardick's Hay-cutters.
126. " seven Deere's Plows.
286. " Clipper Mower.
287. " Lawn Mower.
288. " Agricultural Exhibits.
641. " Junior Buckeye Mower.
612. H. Appleton, Patent Incubator.
645. Baker & Hamilton, Pitt's Improved California Separator.
646. " Vandiver Corn Planter.
647. " Excelsior Combined Reaper and Mower.
648. " Champion Self-raking Reaper and Mower.
649. " Excelsior Lawn Mower.
650. " Julian Churn.
652. " Day's Patent Side-hill Plow.
653. " Price's Gang Plow.
643. " Iron-clad Gang Plow.
655. " California Gem, Power Seed-sower.
656. " Cotton Gin and Condenser.
657. " Enterprise Grinding Mill.
658. Price Press Company, Price's Hay-baling Press.
660. Derville Bequette, model Flouring Mill.
688. F. B. Lamb, Milk-cooler.
689. F. B. Lamb, Vegetable Cutter.
690. F. B. Lamb, Vegetable Washer.
691. Hawley & Co., Sulky Cultivator.
692. Hawley & Co., two Moline Plows.
696. Linforth, Kellogg & Co., World Mower.
697. Linforth, Kellogg & Co., World Mower and Reaper.
967. Baker & Hamilton, Post-hole Digger.
979. G. Anderson, Union Dairyman Cheese Vat.
986. Matteson & Williamson, Horse Fork.
987. Matteson & Williamson, Chisel Cultivator.
1044. Olpha Bonner, Jr., Patent Hay Rake.
1059. S. Johnson, Rotary Digger.
1073. Hawley & Co., Vineyard Plow.
1075. G. A. Lloyd, Patent Egg Carrier.
1091. Matteson & Williamson, Sulky Gang Plow.
1692. M. Barthel, Patent Farm Gate.
1319. Hill & Knaugh, Gang Plows.

1734. O. C. Ely, seven Jones & Weston Star Plows.
430. F. DeGear, model of Horse Rake.
476. Dunn & Campbell, Wrought iron Harrows.
477. Dunn & Campell, Cast iron Harrows.
726. G. A. Lloyd, Egg and Fruit Carriers' boxes.
748. William Anderson, Lawn Sprinkler.
1744. E. Higgins, Model Farm Gate.
1484. Lawton & Lennox, Patent Wire Bale Tie.
1734. Jones & Weston, Star Plow.
472. Travis & Wagner, a 20-inch Portable Mill.
473. Travis & Wagner, a 16-inch Portable Mill.
1792. Kimball Manufacturing Company, Improved Eagle Wool press.
426. E. K. Howes, Box Churn.
1858. Shoenstein & Klein, Grape Crusher and Stemmer.
116. W. A. Field, model of Self-opening and Shutting Gate.

To the President and Baard of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Section A, of Division III., Class 10, beg leave to submit the following report:

To Catalogue Nos. 26 and 27, Entry No 16, Mower and Reaper, and Mower, exhibited by Linforth, Kellogg & Co., compact with covered gearing, a Diploma.

To Catalogue No. 35, Entry No. 23, six Improved Eureka Churns, different sizes;

To Catalogue No. 89, Entry No. 47, Clipper Self-raker and Reaper;

To Catalogue No. 90, Entry No. 47, Mower;

To Catalogue No. 91, Entry No. 47, three Plows;

To Catalogue No. 92, Entry No. 47, two Feed Mills;

To Catalogue No. 93, Entry No. 47, one Hill's Lawn Mower. Exhibited by Hawley & Co. Honorable Mention.

To Catalogue No. 1214, Entry No. 178, Gopher Trap, exhibited by Mooney & Lloyd. Honorable Mention. [Awarded a Diploma.]

Catalogue No. 1249, Entry No. 707, Harvester exhibited by Howell & Low. Medal. [Silver Medal Awarded.]

Catalogue No. 1256, Entry No. 713. T. K. McDonald, Model Grapevine Gang Plow. Honorable Mention.

Catalogue No. 1290, Entry No. 743, Double-action Churn, exhibited by Thos. B. Parks. Diploma. [Awarded a Diploma.]

Catalogue No. 110, Entry No. 206, Gang Sulky Plow. J. H. Andrews. Honorable Mention.

Catalogue No. 110, Entry No 206, a double Sulky Plow. J. H. Andrews. Honorable Mention.

Catalogue No. 113, Entry No. 207, Grape Crusher, M. Keller. Honorable Mention.

Catalogue No. 123, Entry No. 215, Buckeye Self-raking Reaper. M. C. Hawley & Co. Honorable Mention.

Catalogue No. 124, Entry No. 215, Deere's Walking Cultivator. M. C. Hawley & Co. Honorable Mention.

Catalogue No. 125, Entry No. 215, six Bardick's Hay-cutters. M. C. Hawley & Co. Honorable Mention.

Catalogue No. 126, Entry No. 215, seven Deere's Plows. M. C. Hawley & Co. Honorable Mention.

Catalogue No. 289, Entry No. 274, Clipper Mower. Hawley & Co. Honorable Mention.

Catalogue No. 287, Entry No. 274, Lawn Mower. Hawley & Co. Honorable Mention.

Catalogue No. 288, Entry No. 274, Agricultural Exhibits, Hawley & Co. Honorable Mention.

Catalogue No. 612, Entry No. 288, H. Appleton, Patent Incubator. Diploma [Awarded a Diploma.]

Catalogue No. 641, Entry No. 303, Junior Buckeye Mower. M. C. Hawley & Co. Honorable Mention.

Catalogue No. 645, Entry No. 306, Pitt's Improved California Separator. Baker & Hamilton. Diploma.

Catalogue No. 646, Entry No. 306, Vandiver's Corn Planter, Baker & Hamilton. Honorable Mention.

Catalogue No. 647, Entry No. 306, Excelsior Combined Reaper and Mower, Baker & Hamilton. For simplicity of construction and other merits a Diploma. [Awarded a Diploma.]

Catalogue No. 648, Entry No. 306, Champion Self-raking Reaper & Mower. Baker & Hamilton. For simplicity of construction and other merits a Diploma. [Awarded a Diploma.]

Catalogue No. 649, Entry No. 306, Excelsior Lawn Mowers, Baker & Hamilton. Honorable Mention.

Catalogue No. 650, Entry No. 305, Julian Churn, Baker & Hamilton. Honorable Mention.

Catalogue No. 652, Entry No. 307, Day's Patent Side-hill Plow, Baker & Hamilton. Honorable Mention.

Catalogue No. 653, Entry No. 307, Price's Patent Gang Plow, Baker & Hamilton. Honorable Mention.

Catalogue No. 654, Entry No. 307, Iron-clad Gang Plow, Baker & Hamilton. Honorable Mention.

Catalogue No. 655, Entry No. 307, California Gem Power Seed Sower, Baker & Hamilton. Diploma.

Catalogue No. 656, Entry No. 307, Cotton Gin and Condenser, Baker & Hamilton. Honorable Mention.

Catalogue No. 657, Entry No. 307, Enterprise Grinding Mill, Baker & Hamilton. Honorable Mention.

Catalogue No. 658, Entry No. 308, Price's Hay Baling Press, Price Press Company. Diploma.

Catalogue No. 660, Entry No. 310, model Flouring Mill, Derville Bequette. Honorable Mention.

Catalogue No. 688, Entry No. 327, Milk-cooler, F. B. Lamb. Diploma.

Catalogue No. 689, Entry No. 327, Vegetable Cutter, F. B. Lamb. Honorable Mention.

Catalogue No. 690, Entry No. 327, Vegetable Washer, F. B. Lamb. Honorable Mention.

Catalogue No. 691, Entry No. 328, Sulky Cultivator, Hawley & Co. Honorable Mention.

Catalogue No. 692, Entry No. 328, two Moline Plows, Hawley & Co. Honorable Mention.

Catalogue No. 696, Entry No. 332, World Mower, Linforth, Kellogg & Co. Diploma. [Awarded a Diploma.]

Catalogue No. 697, Entry No. 332, World Mower and Reaper, Linforth, Kellogg & Co. Diploma. [Awarded a Diploma.]

Catalogue No. 967, Entry No. 365, Post-hole Digger, Baker & Hamilton. Honorable Mention.

Catalogue No. 979, Entry No. 375, Union Dairyman's Cheese Vat, G. Anderson. Diploma.

Catatogue No. 986, Entry 380, Horse Fork, Matteson & Williamson. Honorable Mention.

Catalogue No. 987, Entry No. 380, Chisel Cultivator, Matteson & Williamson, Honorable Mention.

Catalogue No. 1044, Entry No- 608, Olpha Bonney, Jr., Patent Hay Rake, Diploma.

Catalogue No. 1059, Entry No. 620, Rotary Digger, S. Johnson, Honorable Mention.

Catalogue No. 1073, Entry No. 732, Vineyard Plows, Hawley & Co. Diploma.

Catalogue No. 1075, Entry No. 634, Egg Carrier. G. A. Lloyd. Honorable Mention.

Catalogue No. 1091, Entry No. 645, Sulky Gang Plow. Matteson & Williamson. Diploma.

Catalogue No. 1092, Entry No. 646, Patent Farm Gate. M. Barthel. Honorable Mention. [Diploma Awarded.]

Catalogue No. 1319, Entry No. 665, Gang Plows. Hill & Knaugh. Silver Medal. [Awarded a Silver Medal.]

Catalogue No. 1734, Entry No. 885, seven Jones & Weston, Star Plows. O. C. Ely. Diploma. [Awarded a Diploma.]

Catalogue No. 430, Entry No. 421, F. DeGear, model of Horse Rake. Honorable Mention.

Catalogue No. 476, Entry No. 450, Wrought-iron Harrows. Dunn & Campbell. Honorable Mention. [Awarded a Diploma.]

Catalogue No. 477, Entry No. 450, Cast-iron Harrows. Dunn & Campbell. Honorable Mention.

Catalogue No. 726, Entry No. 485. Egg and Fruit Carriers' Boxes. G. A. Lloyd. Diploma.

Catalogue No. 748, Entry No. 503. Lawn Sprinkler. Wm. Anderson. Honorable Mention.

Catalogue No. 1744, Entry No. 804. Model Farm Gate. E. Higgins. Honorable Mention.

Catalogue No. 1484, Entry No. 785. Patent Wire Bale-tie. Lawton & Lennox. Honorable Mention.

Catalogue No. 473, Entry No. 447. A 20-inch Portable Mill. Travis & Wagner. Honorable Mention.

Catalogue No. 472, Entry No. 447. A 16-inch Portable Mill. Travis & Wagner. Honorable Mention.

Catalogue No. 426, Entry No. 307. Box Churn. E. K. Howes. Honorable Mention.

Catalogue No. 1792, Entry No. 933. Improved Eagle Wool Press. Kimball Manufacturing Company. Honorable Mention.

Catalogue No. 1858, Entry No. 948. Grape Crusher and Stemmer. Schoenstein & Klein. Honorable Mention.

All of which is respectfully submitted.

R. B. WOODWARD.
W. B. EWER.
E. S. CARR.

DIVISION III.—CLASS 10.

Sec. B.—STEAM PLOWS AND CULTIVATORS, AGRICULTURAL ENGINES, Etc.

644. Baker & Hamilton, Wood & Mann's Portable Threshing Engine.
651. Baker & Hamilton, Eagle Hay-cutter.
667. D. & H. A Winter, Combination Seed Sower and Cultivator.
674. M. C. Hawley & Co., National Hay-cutter.

676. Weister & Co., Hunter's Improved Grain Cleaner.
679. O. Johnson, Vreland's Broad-cast Seed-sower.
695. Pacific Ramie Company, Ramie Cleaning Machine.
971. R. Stone, Novelty Mill and Grain Separator.
1045. Nash, Miller & Co., Grain Separator.
1063. W. H. Pope, Broad-cast Seeder and Cultivator.
1071. George W. Agland, Buckeye Tobacco Cutter.
1077. Weister & Co., Power Corn Puller and Husker.
1078. Weister & Co., Hand Corn Puller & Husker.
459. Thomas Wheaton, Buckeye Hay-cutter.
474. Amos Davis, Grain Separator.
963. F. A. Huntington, Flax Breaker.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 10, Section B, of Division III, beg leave to present the following report:

Catalogue No. 644, Entry No. 306. Baker & Hamilton, Wood & Mann's Portable Threshing Engine. Diploma.

Catalogue No. 651, Entry No. 306. Baker & Hamilton, Eagle Hay-cutter. Diploma.

Catalogue No. 667, Entry No. 314. D. & H. A. Winter, Combined Seed Sower and Cultivator. Diploma. [Awarded a Diploma.]

Catalogue No. 674, Entry No. 319. M. C. Hawley & Co., National Hay-cutter. Honorable Mention.

Catalogue No. 670, Entry No. 321. Weister & Co., Hunter's Improved Grain Cleaner. Diploma. [Awarded a Diploma.]

Catalogue No. 679, Entry No. 323. O. Johnson, Vreland's Broad-cast Seed-sower. Honorable Mention.

Catalogue No. 695, Entry No. 331. Pacific Ramie Company, Ramie Cleaning Machine. A new machine, soon to be wanted. The owner is deserving a Medal for getting it here and placing it on exhibition.

Catalogue No. 671, Entry No. 369. R. Stone, Novelty Mill and Grain Separator. Diploma. [Awarded a Diploma.]

Catalogue No. 1063, Entry No. 624. W. H. Pope, Broad-cast Seed Cultivator. Honorable Mention.

Catalogue No. 1071, Entry No. 630. Geo. W. Agland, Buckeye Tobacco Cutter. The only machine of the kind in the State, and much needed. Diploma.

Catalogue No. 1077, Entry No. 636. Power Corn Puller and Husker. Weister & Co.

Catalogue No. 1078, Entry No. 636. Hand Corn Puller and Husker. Weister & Co. Only one in the State, and wanted. Diploma. [Awarded a Diploma.]

Catalogue No. 459, Entry No. 440. Thomas Wheaton, Buckeye Hay-cutter. Diploma.

Catalogue No. 963, Entry No. 362. F. A. Huntington, Flax Breaker. A new exhibit of a valuable machine really wanted in California. [Awarded a Diploma.]

All of which is respectfully submitted.

W. B. EWER, Chairman.

DIVISION III.--CLASS 11.

MACHINERY OF VARIOUS MANUFACTURE, SEWING MACHINES, PAPER MAKING, RULING, WEAVING, SPINNING, PRINTING, TYPE-MAKING, Etc.

6. H. E. Lea, Pacific Steam Washing Machine.
1229. G. K. Sanderson, Watchman's Register.
1246. Buckingham & Hecht, McKay's Sewing Machine.
680. A. H. Suplee, Elliptic Sewing Machine.
968. G. A. Norton & Co., Assortment new Wilson's Sewing Machines.
1011. Pacific Steam Works, Frame Bonnet-making Machine.
1051. San Francisco Glass Works, Glass-moulding Machine.
1338. Frank G. Edwards, Paper-hangings Printing Machine.
411. Parker Merrill, Carpet-beating Machine.
415. C. C. Coleman, Photograph Card-cutting Machine.
701. Wilcox & Gibbs, Sewing Machines.
1143. Wilcox & Gibbs, Sewing Machines.
213. C. C. Coleman, Washing and Pressing Machine.
687. F. B. Lamb, Two Pioneer Washing Machines.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

We the undersigned Committee appointed to examine and adjudge articles on exhibition in Division III, Class 11, do recommend the following awards of premiums:

Entry No. 4, Catalogue No. 6. Pacific Steam Washing Machine. E. H. Lea. Fourth Premium.

Entry No. 199, Catalogue No. 1229. Watchman's Register. G. K. Sanderson. Fourth Premium.

Entry No. 704, Catalogue No. 1246. McKay's Sewing Machine. Buckingham & Hecht. First Premium.

Entry No. 397, Catalogue No. 1011. Frame Bonnet-making Machine. Pacific Steam Works. Fourth Premium.

Entry No. 678, Catalogue No. 1338. Paper-hangings Printing Machine. Frank G. Edwards. Third Premium.

Entry No. 408, Catalogue No. 411. Carpet-beating Machine. Parker Merrill. Second Premium. [Awarded a Diploma.]

Entry No. 410, Catalogue No. 415. Photograph Card-cutting Machine. C. C. Coleman. Fourth Premium.

Entry No. 243, Catalogue No. 213. Washing and Pressing Machine. C. C. Coleman. Fourth Premium.

Entry No. 327, Catalogue No. 687. Pioneer Washing Machine. F. B. Lamb. Third Premium.

Respectfully submitted.

H. KIMBALL.
ASA E. HOVEY.
W. S. SPINNING.
JOSHUA HENDY.
GEO. K. GLUYAS.

DIVISION III.—CLASS 12.

SEC. A.—TELEGRAPHIC APPARATUS, SEXTANTS, QUADRANTS, SURVEYORS' INSTRUMENTS, ETC.

550 to 559, inclusive. Heald's Business College Telegraphic and Electrical Apparatus.
811, 812. John Roach, Engineer's Instruments and Optical Goods.
1210. Dr. H. Allen, Electro-Magnetic Instruments.
220. V. S. W. Parkhurst, Scales.
230. V. S. W. Parkhurst, Scales.
1050. Pacific Business College, Telegraphic Apparatus.
1089. Charles Pace, Sextants, Chronometers, Barometers, etc.
792. Electrical Construction and Maintenance Company, Electrical and Telegraphic Apparatus.
1662. John Roach, Solar Transit.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee to adjudge articles on exhibition at the Eighth Industrial Fair of the Mechanics' Institute in Division III, Class 12, Section A, do recommend that the following premiums be awarded:

First Premium, to John Roach, for California-made Transit Instruments, Solar Transit, Engineers' Instruments, Optical Goods, etc. These instruments are of a high order of workmanship, and are a credit to the maker. The Solar Transit is worthy of Special Notice. [Awarded Silver Medal.]

Second Premium, to the Electrical Construction and Maintenance Company, for California-made Telegraph Instruments and Electrical and Telegraphic Machinery, Electrical Burglar Alarms, Electrical Fire Alarms, Electrical Bell Systems, Electrical Hotel Annunciators, Electrical Blasting Apparatus, Fuses and Printing Telegraph Instruments for private lines. These instruments are well made and beautifully finished, fully equal in all respects to any imported. [Awarded a Silver Medal.]

Fourth Premium, to Charles Pace, for fine exhibition of Sextants, Chronometers, Barometers, etc. These instruments are beautifully finished, and make a very creditable display. [Award, Honorable Mention.]

Fourth Premium, to V. S. W. Parkhurst, for exhibition of Howe's Standard Scales. This is a very fine display of these magnificent Scales. [Award, Honorable Mention.]

Fourth Premium, to Heald's Business College, for Telegraph Instruments. [Award, Honorable Mention.]

All of which is respectfully submitted,

M. GREENWOOD,
EDWARD DILLON,
THOMAS TENNENT.

DIVISION III.—CLASS 12.

B.—DENTAL AND SURGICAL INSTRUMENTS, MACHINES AND APPLIANCES, Etc.

568. D. S. Hutchinson, specimens of Mechanical Dentistry.
832. Dr. E. Belle, Apparatus for Extracting Teeth Without Pain.
826. Dr. Henry A. Luther, case of Artificial Dentistry.
1211. Dr. H. Allen, Four Anatomical Plates.
1440. Mrs. M. A. Suydam, case of Cornea Restorers.
668. David M. Phelps, Air Pump.
1344. John Roach, Lung Tester.
707. Bush & McAllister, case of Dental Work.
760. J. P. Gillespie, case of Dental Specimens.
1122. D. M. Hughes, case of Dental Work.
1147. Dr. E. Belle, case of Dental Work.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee to adjudge articles on exhibition at the Eighth Industrial Fair of the Mechanics' Institute, in Division III, Class 12, Section B, begl eave to report :

First.—That none of the articles exhibited are entitled to the award of a *Prize.*

Second.—That the specimens of Artificial Dentistry indicated in the Catalogue by Nos. 568, 707, 760, 826, 1122, and 1147, exhibit commendable skill in workmanship. With reference to the Improved Method of Securing Plates to the Roof of the Mouth by means of Atmospheric Pressure, your Committee are of opinion that the restriction of pressure to *small areas* must necessarily be attended with difficulties and inconveniences as great as those of the old method.

Third.—That the "Exhausting Air Pump," (Catalogue No. 668), for "Canning Fruits, Vegetables, etc.," has all the merit claimed for it in rapidity and facility of operation ; but the necessity of a special Exhausting Air Pump will be a serious obstacle to its general use as a household method. The method of "canning" by means of the "Steam Vacuum" process, which is executed by any housewife without the assistance of any special apparatus, although requiring the application of heat, is so simple and cheap as to supercede all others for household purposes. Perhaps the worthy improver of the "Air Pump Process" may find a demand for his apparatus in large establishments, since the articles of food thus "*canned*" are *not* modified by the action of heat, and must therefore retain their original freshness.

Fourth.—That the "Cornea Restorer," (Catalogue No. 1440), is an old contrivance, and no appliance of a similar character can possibly superinduce any *permanent* alteration of form or displacement of lenses in the eyeball. The fluids of the eye are contained in a closed flexible envelope, and hence *no permanent* distortion of form can be produced by such mechanical appliances.

Fifth.—Your Committee feel it their duty to characterize two "Anatomical Plates," (Catalogue No. 1211), as *utterly unworthy* of exhibition. Such exhibitions are intended for the *instruction* and *education* of the public ; and no language of condemnation is too strong in relation to all attempts to impose upon the credulity of the ignorant.

JOHN LeCONTE,
W. T. REILLY.

DIVISION IV.

PRODUCTS OF MANUFACTURES AND TRADES.

MANUFACTURES IN METALS.

The display in this leading feature of our local industries was highly gratifying, every brand of this extensive class being well represented, and giving cheering evidence of renewed activity in a line that had to a certain extent, through a combination of circumstances, been suffered temporarily to languish.

The exhibit of a great variety of castings gave a good idea of the extent of this class of our manufactures, and the specimen of wrought iron, for excellence of workmanship, and character of design could not be surpassed.

The samples turned out by the Pacific Rolling Mill, and our foundries, machine and workshops, bore ample testimony of their ability to successfully compete with similar establishments in any portion of the country. The entire display was such as to convince the most skeptical that everything belonging to this extensive class can be manufactured here, equal in quality and cheapness to that produced abroad; and when the extensive iron deposits that exist in this and adjoining States are made available, this interest will be materially advanced. The specimens of metal smelted from the ores found in large quantities in Oregon, exhibited two years since, fully proved that the production of iron on this coast was no longer an experiment, and the extensive deposits of this valuable and useful mineral known to exist in Sierra and contiguous counties in this State, are beginning to attract the attention of Eastern capitalists largely engaged in iron manufactures. The establishment of the Pacific Rolling Mill, more than three years since, which has been in successful operation during the intervening time, was indeed a propitious event in the history of manufacturing in this State, and the specimens exhibited by this company are the best evidence of what they are able to accomplish. This establishment, does the greater portion of the heavy forging for steamboats and railroad machinery, for which, a few years since, we were almost entirely dependent upon the works of the Eastern cities. Steamboat shafts, car and locomotive axles and hammered iron of all descriptions are turned out with facility and dispatch. The wants of the railroads in this and adjoining States have been supplied from this source, avoiding great delay and largely increased expense.

There are in operation in the city of San Francisco fifteen foundries, three boiler and eighteen machine shops, and four miscellaneous establishments engaged in the working of metals, making forty in all, with a capital invested amounting to $1,484,000. There has been melted at these establishments during the past year 15,726 tons of pig iron, and there has been used 9,053 tons of wrought and boiler iron. Near eleven hundred hands are employed. The manufacture in this department for the year amounted to $3,013,000.

The San Francisco Lead Pipe and Shot Works, established by Thomas H. Selby & Co. in 1865, samples of the product of which were displayed in the Exhibition, have filled an important mission since their establishment in 1865. What was then considered a doubtful experiment has proved an undoubted success; and this coast is now mainly supplied with lead pipe and shot manufactured at this establishment, from metal smelted from the ore of this region, at the extensive Metallurgic Works belonging to the same proprietors.

The array of Stoves of all kinds and extensive and improved Cooking Ranges gave abundant and satisfactory evidence of what can be accomplished at home in this branch of manufacture. So successful has been this trade, and such is the increased demand in this line, that one of the principal manufacturing firms of San Francisco, the display of whose wares attracted much attention in the Exhibition, is about completing an extensive foundry for the

production of this class of manufactures, at an eligible point on the Bay of San Francisco.

The exhibit of Fire and Burglar Proof Safes was large and interesting in character. It is highly creditable to the skill and ingenuity of San Francisco workmen that the first premium in this warmly-contested department was borne away by a home manufacturer.

The samples of Cast Steel manufacture and Cast Steel Ingots, Forged Nuts, Bolts, Spikes, Nuts, etc., Carriage Springs, Iron Doors, and many other manufactures, were interesting exhibits of skillful workmanship.

The display of Locks of varied sizes and combinations was large, and alike creditable to the ingenuity and skill employed in this intricate manufacture.

Of California Cutlery, which has won an enviable reputation abroad for superiority of quality and workmanship, there was a creditable collection; and the samples of Hardware and Edge Tools were numerous and of a superior quality. The specimens of Augers—the first manufactured in California, and for which a silver medal was appropriately and very justly awarded—were in no respect inferior to the best articles imported from abroad.

The assortment of Brass goods fully sustained the widely-extended reputation of their enterprising manufacturers; and the exhibition of Tin, Copper and Japanned ware was of great variety and superior in quality—the latter, especially, attracting much notice.

MANUFACTURES FROM WOOD.

When the fact is known that the value of the Wood-work turned out by the mills and manufactories of San Francisco amounts to over four millions of dollars annually, the importance of this branch of manufacture will be fully apparent. The extent and variety of the Mill Wood-work produced in San Francisco have been greatly admired, and a large amount of complicated machinery, embodying many important improvements made by parties here, is called into active play in the prosecution of the business. The Sawed Scroll Work and Fancy Mouldings of various patterns and devices displayed in the Exhibition were handsome samples of the superior skill and artistic taste prevailing in this department. The samples of Twist Mouldings were also especially noted for their elegance and graceful design.

The great extent of the manufactures of Wines and Malt Liquors has caused an increased demand for Cooperage, and with each succeeding year the demand for casks is largely on the increase. Several creditable specimens in this line were to be found in the Exhibition. The manufacture of Boxes also occupies an important place in the ranks of our home industries, and, as will be seen from the list of awards, the samples exhibited received marked approbation.

The specimens of Wood Carpeting, Marquetry and Wainscotting embodying pleasing effects in the arrangement of various colored woods in the form of Mosaic work, attracted much attention. The elegant inlaid Tables in another department also exemplified in a higher degree and more finished form the beautiful effects to be produced by the contrasts of the variety of ornamental woods peculiar to this region.

In the exhibit of California-made Lasts the fact was demonstrated that a new and important feature in our domestic manufactures had been inaugurated since the last Exhibition.

The extensive and varied assortment of Wooden ware of home manufacture, from native woods, attracted much attention, and received appropriate acknowledgment of its excellence and merits. The display of Willow ware, mostly manufactured here, and a portion from material grown in California evinced steady progress in this increasing manufacture.

It may be reasonably questioned whether any similar exhibition in any portion of our country could surpass for variety, elegance and marked beauty of the material employed, the superior display of Furniture made at the Exhibition of the Institute, which, it is admitted in this particular, surpassed all of its predecessors. The large display of Parlor, Chamber, Office and School Furniture, for artistic elegance and convenience of form and arrangement, evinced

a marked improvement in a department hitherto regarded as having attained as near an approach to perfection as was within the reasonable limits of possibility. Every article exhibited was in itself a monument of the skill of our California manufacturers, and the employment of our native ornamental woods in the construction of many of the pieces—the unrivalled California Laurel predominating—added greatly to the interest of the display. The workmanship of the Pianos and Billiard Tables of California manufacture could successfully challenge competition with those of the oldest and most noted manufactories in any portion of the country. The extensive manufacture of Furniture in this city is steadily on the increase, and its annual returns foot up considerably over a million of dollars.

In the department of Carriages and Wagons the exhibit surpassed that of any previous occasion for the extent and quality of the samples. A marked improvement was observable throughout, and in all the details abundant evidence furnished that as elegantly-finished, serviceable and light-running vehicles can be turned out by our home establishments as can be produced in the most celebrated Eastern manufactories.

GLASSWARE, ETC.

The samples of Glass-ware exhibited gave a striking proof that this important manufacture, in the hands of enterprising men, after struggling for a series of years with varied success, is at length in a position to adequately reward those embarked in it. The samples of Green and Black Glass-ware, Carboys and Demijohns from the Pacific Glass Works, and Demijohns, Chimneys and Retorts—the latter being extensively used in the acid manufactories of this city—and of these articles being in common demand from the San Francisco Glass Works, give some idea of the excellent quality of the articles produced at these establishments. The business of glass-blowing was originally commenced by the first-named Company on the 16th of June, 1863, and steadily continued to the present time. At this establishment a seven-crucible furnace, the largest on this coast, is in use. Its capacity for melting is five tons every twenty-four hours. From sixty to eighty hands, with from fourteen to eighteen glass-blowers are kept constantly employed. A new press, of the latest pattern, has been received from the East and put in operation ; and the works contain twelve large tempering ovens capable of cooling three hundred dozen. The amount manufactured at this establishment each month is estimated at $12,000. The exhibits of White Flint and Blue Glass-ware and Amber Wine Bottles, by Messrs. Newman & Duval, and Ground, Cut and Stained Glass, by Thomas O'Neil, were well worthy of notice ; in short, the entire display in this department, both of Glass and Pottery, evinced a steady advance in each of these important manufacturing branches. The immense Plate Glass Mirror Conspicuously placed in the Fine Arts' Hall, reflected great credit upon the advanced state of this manufacture among the other arts in San Francisco.

LEATHER.

The manufacture of Leather, and the great variety of useful articles with which this material is worked up, forms a most important feature of the industries of our city and State. Previous to the discovery of the gold in California hides alone formed the principal article of export from these shores ; and for a number of years after the discovery, which congregated the emigration of the civilized world at one common centre of attraction, the export continued to be a source of considerable profit. In the course of time tanneries were established, and a superior article of Leather, the excellence of which was to be attributed to the good quality of the hides and the superiority of the oak bark, was produced here. For a number of years the regular shipments in this line by the Panama steamers averaged over 2,000 hides per month. The policy of shipping the raw material to the East and bringing it back in the shape of the manufactured article needed for home consumption was found to be questionable economy, and accordingly there has gradually been called into existence an extent of manufactories in this department that has measurably checked the export of Leather from this coast abroad.

There are forty Tanneries in the entire State of California, the greater portion of which are located in San Francisco, the remainder being variously distributed at points throughout the Valley portion of the State, Santa Cruz, San

José, Santa Clara, Stockton, Petaluma, Healdsburg, Vallejo, Benicia, Marysville, Redwood City, Soquel, and in the vicinity of Oakland. Next to San Francisco, Santa Cruz is the most largely interested in this branch of business. More than two hundred workmen are kept employed in the San Francisco establishments alone. Sixty thousand hides are tanned during the year, and the estimated value of the manufactured article is $713,640. The qualities of Leather principally manufactured are Sole, Kip, Harness, Belting and Hose, although within the past few years considerable attention has been paid to Calfskin and Morocco.

The really admirable display of Boots and Shoes in the Exhibition, made by our home manufacturers, was the best evidence of what has been successfully accomplished by those who have embarked in the business, and by untiring energy overcome the numerous obstacles which at first impeded their progress. The quality of the goods exhibited, for elegance of workmanship, and the substantial merits and durable character of the material employed in this manufacture, would compare favorably with the best samples produced abroad.

The samples of Saddlery and Harness exhibited fully sustained the reputation achieved in this line on numerous former occasions ; and those making the awards in the classes of manufactures before mentioned have given distinguishing marks of the high opinion entertained of their merit.

WOOLEN GOODS.

The superiority of the more substantial quality of Woolen Goods turned out by the mills of this Coast, although the business is still comparatively in its infancy, has been fully established both at home and abroad. At the Great Exhibition of Textile Fabrics, manufactured in the Northwest and South, in the city of Cincinnati in 1868, a sample of the blankets manufactured in San Francisco was awarded a premium for their evident superiority over the extensive competition in this peculiar line ; and the home exhibit of Blankets, Cloths and Cassimeres, produced by the California and Oregon Mills, fully sustained the commanding position and enviable reputation achieved by this important class of home manufactures. As a Wool-growing State California stands confessedly without a rival, for the extent of the resources and the advantage of climate which she possesses over all others. The annual Wool clip reaches 20,000,000 pounds, one-fifth of which amount only is manufactured here, the remainder being exported abroad. When the fact is known that a leading importing establishment, some time ago, ordered $300,000 worth of the substantial fabrics produced here, such a condition of affairs ought not to exist.

The exhibit of Custom-made Clothing of all kinds, with Flannel and other Underwear, Shawls and Scarfs, Flannels and Cloakings, Hosiery and Woolen Yarns was extensive, and of elegant make and quality.

FIBRE AND PULP.

With regard to Fibre and Pulp manufactures, there was an encouraging show of Rope and Cordage of California production, as well as a superior article sent from Australia. The samples of home-made Burlaps, Twine and Jute Yarn received, as they deserved, commendable marks of approbation.

The samples of Paper on exhibition were of good quality and equal to the imported article of same grade.

CORDAGE.

The only manufacturers of Cordage on the Pacific Coast is that of Tubbs & Co., manufacturers of Manila Rope and Cordage, and A. S. Hallidie, manufacturer of Wire Rope and Cordage, in the city of San Francisco, which have been in constant operation since their first establishment in 1856. The machinery in use at Messrs. Tubbs & Co. comprises all the latest improvements. There are twenty-eight new and fifty-four old style spinning machines employed in the manufacture of Yarn. The length of the Rope Walk is 1,700 feet, and over eighty hands are kept constantly employed about the establishment.

The machinery in use at A. S. Hallidie's is likewise of the latest improvement, and, working automatically, dispenses with a large amount of hand

labor. Its capacity is sufficient to supply the whole Pacific Coast. Immense Ropes have been made here, especially for the mines in Nevada. Steel Flat Ropes 6 inches wide, ½ an inch thick, and 2,000 feet long, weighing 11,000 pounds, and in one piece, have been turned out. The wire from which these ropes are made will soon be manufactured here, a company having purchased and erected machinery for that purpose.

DIVISION IV.—CLASS 13.

SEC. A.—MANUFACTURES IN METALS.

546. U. Boynton, Roller Skates.
1261. A. Brooks, two pairs of Roller Skates.
1274. J. J. Vasconcelles, Stoves.
1282. John L. Boone, C Spring Roller Skates.
252. C. Nutting & Son, Metallic Wheelbarrows.
254. Brittan, Holbrook & Co., Stoves.
255. Brittan, Holbrook & Co., Heaters.
259. J. De La Montanya, Stoves.
260. J. De La Montanya, Heaters.
277. C. Nutting & Son, Iron Fence Castings.
291. Jonathan Kittredge, nine Fire and Burglar-proof Safes.
605. Pacific Rolling Mills, Round Iron.
606. Pacific Rolling Mills, Square Iron.
607. Pacific Rolling Mills, Shafting Iron.
608. Pacific Rolling Mills, Car Axles.
609. Pacific Rolling Mills, Norway Shoe Iron.
681. Center & Bryant, Kerosene Oil Stoves, etc.
964. Brittan, Holbrook & Co., assortment of Peerless Ranges.
970. Wm. Friel, Gasoline Stoves.
973. Pacific Rolling Mills Co., Nuts, Bolts, Spikes, Washers, etc.
974. Pacific Rolling Mills Co., Flat Iron.
975. Pacific Rolling Mills Co., Band Iron.
1068. Francis Smith & Co., Sheet Iron Water-Pipe.
1076. B. Le Clerc, French Cooking Range.
1096. Jonathan Kittredge, large Fire and Burglar-Proof Safe.
1097, to 1,100, inclusive. Locke & Montague, Stove Ware.
1301. Locke & Montague, display of Bronzeed Iron Vases and Pedestals.
1302. Locke & Montague, Cast Iron Fountain.
1313. Spawn & Lyford, five Fire and Burglar-Proof Safes.
1314. Spawn & Lyford, pair of Vault Doors.
1332. Nelson & Doble, specimens of Cast Steel, California Manufacture.
1333. Nelson & Doble, Cast Steel Ingots.
1335. John Wright, specimens of Wright's Picks.
1340 to 1,343, inclusive. W. M. Betts & Brother, Carriage Springs.
451. John Payne, Forged and Finished Nuts.
763. John Burns, Horse Shoes.
740. Wm. McKibbin, three Patent Wheelbarrows.
1764 to 1,780, inclusive. Tay, Brooks & Backus, Stoves.
1447. Craig & Savage, two Burial Cases, California Manufacture.
1807. Savage & Son, Empire Portable Range, California Manufacture.
1808. Savage & Son, Soil Pipe.
1809. Savage & Son, Grate and Fender.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

GENTLEMEN—The undersigned Committee, appointed to examine articles exhibited, and competing for Premiums at the above Exhibition in Division IV., Class 13, Section A, do recommend the following :

Entry No. 94, Catalogue No. 546. Underhill Boynton, Roller Skates, (Kimball).

Entry No. 718, Catalogue No. 1,261. A. Brooks, Roller Skates, (Ladies' Favorite.)

Entry No. 736, Catalogue No. 1,282. Roller Skates, (C Spring Rollers).

Your Committee being aware of the great interest manifested in Roller Skating, have given considerable time to the examination of the different patterns presented to them for inspection, and have also obtained the opinions of experts by actual trial of the several Skates on exhibition. We therefore would recommend to the "Kimball Improved" Skate a Silver Medal ; to the "Ladies' Favorite" Skate a Diploma ; to the "C Spring" Skate, Honorable Mention.

Entry No. 258, Catalogue No. 627. C. Nutting & Son, Metallic Wheelbarrows, constructed entirely of iron, the handles of pipe, adding to their lightness as well as to their strength. Three sizes exhibited. A good article and well made. We recommend a Diploma. [Awarded a Diploma.]

Entry No. 495, Catalogue No. 740. Wm. McKibben, Patent Wheelbarrows of a new and novel pattern, made wholly of iron; are well constructed and show great strength. By an ingenious arrangement the wheel is so placed as to receive a greater portion of the weight, thus relieving the arms, preserving the equipoise, and making the unloading in front a matter of little exertion. We recommend a Diploma. [Awarded a Diploma.]

Entry No. 730, Catalogue No. 1,274. J. Vasconcelles, Plain, Extension and Parlor Cooking Stoves. We recommend Honorable Mention.

Entry No. 160, Catalogue No. 2,545. Brittan, Holbrook & Co., Stoves and Heaters. Exhibit the "Peerless" Portable Range, "Stewart" Stove, also Heating Stoves of various kinds. These Stoves are well known and highly recommended. Your Committee recommend a Diploma.

Entry No. 264, Catalogue Nos. 259 and 260. J. De La Montanya, Stoves and Heaters. Exhibit the "Arlington" and "Union" Ranges. Your Committee, after a careful examination of the various Portable Ranges, feel they have a task before them in deciding on their respective merits, where there are so many, and all so well deserving. We have decided, in view of the superior mechanical construction, the smoothness of finish, and the many convenient appliances for family use, to recommend a Silver Medal to the "Arlington" Portable Range.

Entry No. 651, Catalogue No. 1,097. Locke & Montague, Improved French Range, and Eureka Stoves. These gentlemen exhibit a French Range of superior construction and of home manufacture. We consider this article far ahead of imported goods of this class. We recommend a Silver Medal.

Entry No. 651. Locke & Montague, Brindle Steamer and Cauldron. This Grain Steamer is invaluable to the farmer, is well constructed and adapted to the use intended. We recommend a Diploma.

Entry No. 882, Catalogue No. 1,764. Tay, Brooks & Backus, Stoves and Ranges. Exhibit the "Richmond," "Palace" and French Range, all of fine construction and workmanship. We recommend to the "Richmond Portable Range" a Diploma.

Entry No. 920, Catalogue No. 1,807. Savage & Son, Empire Portable Range, Iron Soil Pipes, Grate and Fender. The Range exhibited by the above firm, we believe, is manufactured by them. In view of the above fact, and also of its substantial construction, we recommend a Diploma. [Awarded a Diploma.]

For the exhibit of Soil Pipes, Grate and Fender we recommend Honorable Mention.

Entry No. 270, Catalogue No. 277. C. Nutting & Son, Iron Fence Castings, all of good design and finish, for which we would recommend Honorable Mention.

Entry No. 325, Catalogué No. 681. Centre & Bryant, Kerosene Oil Stoves. Well adapted for family use ; neat, and of good construction. We recommend a Diploma.

Entry No. 368, Catalogue No. 970. Wm. Friel, Gasoline Stoves of home manufacture. Great convenience, and economical for small families. We recommend a Diploma.

Entry No. 627, Catalogue No. 1068. Francis Smith & Co., Sheet Iron Water Pipes. Neat and well made, and are worthy of Honorable Mention.

Entry No. 635, Catalogue No. 1076. B. LeClerc, French Cooking Range of home manufacture, of ordinary construction and finish, for which we desire to make Honorable Mention.

Entry No. 675, Catalogue Nos. 1332 and 1333. Nelson & Doble, Cast Steel and Cast Steel Ingots; a sample of the first Steel made on the Pacific Coast. Much credit is due this firm in inaugurating an enterprise on this coast which must ultimately prove of the greatest importanee to the consumer. The samples we have examined are of a superior quality, and we cheerfully recommend a Gold Medal.

Entry No. 400, Catalogue No. 451. John Payne, Forged and Finished Nuts. These Nuts are hot-pressed and punched, of superior make and finish, and home manufacture. We recommend a Diploma. [Awarded a Diploma.]

Entry No. 517. John Burns, Stockton. Horse Shoes of several different kinds, very well made. We recommend a Diploma. [Awarded a Diploma.]

Entry Nos. 286 and 371, Catalogue Nos. 605 to 609 and 973 to 975. Pacific Rolling Mills. Round, Square and Flat Iron, Norway Shapes, Car Axles; Railroad Iron, Screw Bolts, Lag Screws, Nuts, Washers, etc. The above Company exhibit a complete assortment of their manufactures. Their goods need no extended notice from us ; they are all home manufactured. Your Committee recommend a Gold Medal. [Awarded a Diploma.]

Entry No. 680, Catalogue No. 1340, to 1343. Wm. Betts & Bro., Carriage Springs. A complete assortment of all kinds of Springs used in Carriage manufacture. The manner in which these Springs are tested, their superior make and finish, and being a home manufacture, induce your Committee to recommend a Silver Medal. [Awarded a Gold Medal.]

Entry No. 650, Catalogue No. 291. Jonathan Kittredge, Fire and Burglar-proof Safes. The fine display of Safes exhibited by this gentleman has attracted much attention from visitors at the Fair, not only from the mechanical skill and taste displayed in arranging the necessary conveniences, but from the manner in which they are constructed, leaving no doubt with the observer that they are all well adapted to the purposes intended. They are strictly a home manufacture, and your Committee recommend a Gold Medal. [Awarded a Gold Medal.]

Entry No. 661, Catalogue No. 1313. Diebold & Kenzle, Fire and Burglar-proof Safes and Vault Doors. Spawn & Bryant, exhibitors. These gentlemen make a fine display of Fire and Burglar-proof Safes and Vault Doors, of superior construction and finish, comparing favorably with any on exhibition. Your Committee have examined these Safes with great care and would recommend a Silver Medal.

Entry No. 676, Catalogue No. 1335. Nelson & Doble. Wright's Picks. The sample of picks brought to our notice are well made and finished. We recommend Honorable Mention.

Entry No. 766, Catalogue No. 1447. Craig & Savage. Burial Caskets constructed of iron, a home manufacture, and the first made on this Coast; of splendid construction and beautiful finish. Your Committee recommend a Silver Medal. [Awarded a Silver Medal.]

D. R. COLEMAN.
A. FOLSOM.

DIVISION IV.—CLASS 13.

SEC. B.—LOCKSMITHS' WORK, CUTLERY, ETC.

36. G. A. Lloyd, Double-acting Door Spring and Hinge combined (Model.)
37. G. A. Lloyd, Reversible Butt Hinge for Doors.
1258. E. C. Hulburt, Patent Combination Door Lock.
231. V. S. W. Parkhurst, Patent Money Drawer.
666. J. Stott, Patent Locks.
1000. Pacific Saw Manufacturing Company, Plasterers' Tools, Knife-blades, etc.
1009. Will & Finck, display of Cutlery.
1095. Dewey & Co., Dewey & Co.'s Patent Lightning Can Opener.
1330. Leroy & Sweatt, Case of Saddlers' Tools.
1499. and 1500. O. V Gerzebeck, Yale Locks.
404 405, 406. Charles Otto & Co., three cases of Hardware and Tools.
1178. Albert H. Law, Improved Hinge.
1789. M. Price, Cutlery.
1548. Japanese Commission, two Japanese Swords.
1339. J. Weichart, Mower and Reaper, Knives and Edge Tools.
1119. Mitchell & Co., set of Augers—California manufacture.
1052 to 1054 inclusive. G. W. Guion, Wood-working Tools.
271. Pacific Saw Manufacturing Company, Planing Knives.

To the President and the Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Section B, of Division IV., Class 13, beg leave to submit the following report:

No. 36, Double Acting Door Spring and Hinge combined, G. A. Lloyd. Diploma. [Awarded a Diploma.]

No. 37, Reversible Butt Hinge for Doors, G. A. Lloyd. Diploma.

No. 1258, Patent Combination Door Lock, E. C. Hulburt. Diploma. [Awarded a Diploma.]

No. 231, Patent Money Drawer, V. S. W. Parkhurst. Honorable Mention.

No. 666, Patent Locks, J. Stott. Diploma. [Awarded a Diploma.]

No. 1009, display of Cutlery, Will & Finck. Diploma. [Awarded a Silver Medal.]

No. 1330, Saddlers' Tools, Leroy & Sweatt. Diploma.

No. 1449 and 1500, Yale Locks, O. V. Gerzebeck. Diploma. [Awarded a Diploma.]

No. 404, one case of Hardware and Tools, Charles Otto & Co. Diploma. [Awarded a Diploma.]

No. 1770, Improved Hinge, Albert H. Laws. Diploma. [Awarded a Diploma.]

No. 1040, Japanese Swords. Diploma.

No. 1339, Mower and Reaper Knives, and edge Tools, J. Weichart. Diploma. [Awarded a Diploma.]

No. 1119, set of Augers, Mitchell & Co. Silver Medal. [Awarded a Silver Medal.]

No. 1052 to 1054 inclusive, Wood-working Tools, G. W. Guion. Honorable Mention.

No. 271, Planing Knives, etc., Pacific Saw Manufacturing Company. Diploma.

All of which is respectfully submitted.

CHARLES G. EWING.
J. T. HELMKEN.

DIVISION IV.—CLASS 13.

SEC. C.—BRASS, TIN, LEAD, AND COMPOSITE CASTINGS, BRASS FINISHERS' WORK, ETC.

838. P. J. Philips, specimens of Portable Gas Burners and Lamps.
1238. A. S. Hallidie, thirteen coils of Wire Rope and Cordage—California manufacture.
1291. Emil Boesch, samples of patent Lanterns, Lamps and Reflectors.
1441. F. J. Hammill, Parry's new Gas Lamp.
285. Center & Bryant, Metal Chandelier.
637. Berry & Place, four Cylinder Self-oilers.
939. Weed & Kingwell, assortment of Brass Goods.
952. Brittan, Holbrook & Co., Tin-ware.
953. " " Copper-ware.
954. " " Japanned-ware.
955. " " Planished-ware.
977. Whiting & Murbur, Patent Window Fastener.
978. Wm. E. Swett, Sash Fastener.
1002. Yates & Co., Lamps and Lamp Stock.
1012. Fred. W. Clarke, Strainers for Wash-basins.
1324. Thomas H. Selby & Co., Lead-pipe, Block Tin, etc.
1325. Thomas H. Selby & Co., Shot, etc.
1481. G. A. Lloyd, Window Spring.
424. Louis Boudin, Spiral Bed Springs.
738. Ellsworth & Washburn, samples of patent Glass Window Pulleys.
739. Ellsworth & Washburn, Window Frame and Sash.
1190. B. B. Brown, Self-generating Gas Burner.
1691. Merrill & Samuels, Safety Lamps.
1692. Merrill & Samuels, Jet Burners.
1651. George C. Thompson, Soda Fountain.
1718. F. B. Taylor & Co., assortment of Lamps and Lamp Stock.
1720. F. B. Taylor & Co., Gas Chandeliers and Jet Burners.
1764 to 1780, Tay, Brooks & Backus, Japanned ware.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The undersigned Committee appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Division IV, Class 13, Sec. C, beg leave to submit the following report:

Entry No. 138, Catalogue No. 838, specimens of Portable Gas Burners and Lamps. P. J. Philips. Mere Mention.

Entry No. 197, Catalogue No. 1238, thirteen coils of Wire Rope and Cordage—California manufacture. A. S. Hallidie. Silver Medal.

Entry No. 744, Catalogue No. 1291, samples of Patent Lamps, Lanterns and Reflectors. Emil Boesch. Diploma. [Awarded a Diploma.]

Entry No. 761, Catalogue No. 1441. Parry's new Gas Lamp. F. J. Hammill. Mere Mention.

Entry No. 273, Catalogue No. 285. Metal Chandelier. Center & Bryant, Mere Mention.

Entry No. 300, Catalogue No. 637, four Cylinder Self-oilers. Berry & Place. Mere Mention.

Entry No. 353, Catalogue No. 939, assortment of Brass Goods. Weed & Kingwell. Diploma. [Awarded a Silver Medal.]

Entry No. 359, Catalogue No. 952. Tin-ware. Brittan, Holbrook & Co. Mere Mention.

Entry No. 359, Catalogue No. 953. Copper-ware. Brittan, Holbrook & Co. Honorable Mention. [Awarded a Diploma.]

Entry No. 359, Catologue No. 954. Japanned-ware. Brittan, Holbrook & Co. Diploma. [Awarded a Diploma.]

Entry No. 359, Catalogue No. 955. Planished-ware. Brittan, Holbrook & Co. Honorable Mention.

Entry No. 373, Catalogue No. 977. Patent Window Fasteners. Whiting & Murbur. Diploma. [Awarded a Diploma.]

Entry No. 374, Catalogue No. 978. Sash Tightener. Wm. E. Swett. Mere Mention. [Awarded a Diploma.]

Entry No. 389, Catalogue No. 1002. Lamps and Lamp Stock. Mere Mention.

Entry No. 670, Catalogue No. 1324–5. Lead-pipe, Block Tin, Shot, etc. Thomas H. Selby & Co. Gold Medal. [Awarded a Diploma.]

Entry No. 782, Catalogue No. 1481. Window Spring, G. A. Lloyd. Mere Mention.

Entry No. 416, Catalogue No. 424. Spiral Bed Spring, Louis Boudin. Mere Mention.

Entry No. 494, Catalogue No. 738. Samples of Patent Glass Window Pulleys. Ellsworth & Washburn. Honorable Mention.

Catalogue No. 739. Window Frame and Sash. Ellsworth & Washburn. Mere Mention.

Entry No. 591, Catalogue No. 1190. Self-generating Gas Burner. B. B. Brown. Mere Mention.

Entry No. 815, Catalogue No. 1691. Safety Lamps. Merrill & Samuels. [Awarded a Diploma.]

Catalogue No. 1,692. Jet Burners. Merrill & Samuels. Mere Mention.

Entry No. 838, Catalogue No. 1651. Soda Fountain. George C. Thompson. Diploma.

Entry No. 847, Catalogue No. 1718. Assortment of Lamps and Lamp Stock. F. B. Taylor & Co. Mere Mention.

Catalogue No. 1720. F. B. Taylor & Co., Gas Chandeliers and Jet Burners.

Entry No. 882, Catalogue Nos. 1,764 to 1,780. Japanned-ware, Tay, Brooks & Backus—superior article. Diploma.

All of which is respectfully submitted.

WM. S. SNOOK,
JAMES MACKIN,
CHARLES F. ROBBINS.

DIVISION IV.—CLASS 14.

Sec. A.—MANUFACTURES IN WOOD.

899. Wm. R. York, model of House Painting Scaffold.
1276. Schmidt & Burkhardt, large Oval Solid Gilt Frames.
1085. Swan, Dunbar & Co., sample of Manufactured Boxes.
1476. James Hatch, variety of Fancy Mouldings and Scroll Sawings.
403. David R. Smith, Wood Carpeting, Marquetry Flooring, and Wainscotting.
761. Martin Roberts, Dog-house.
437. California Last Company, California-made Lasts.
1647. Wing & Brown, Mammoth Last, Boot-Trees, etc.
1831. J. H. Culver, Samples of Twist Mouldings.
1581. Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited in Division IV., Class 14, Section A, beg leave to present the following report :

Entry No. 172, Catalogue No. 899. Model of House-Painting Scaffold. Wm. R. York. A Diploma.

Entry No. 732, Catalogue No. 1,276. Large Oval Gilt Frames. Schmidt & Burkhardt. Honorable Mention. [Awarded a Diploma.]

Entry No. 646, Catalogue No. 1,085. Sample of Manufactured Boxes. Swan, Dunbar & Co. Diploma. [Awarded a Diploma.]

Entry No. 779, Catalogue No. 1,476. Variety of Fancy Mouldings and Scroll Sawings. James Hatch. Silver Medal. [Awarded a Silver Medal.]

Entry No. 403, Catalogue No. 403. Wood Carpeting, Marquetry Flooring, and Wainscoting. David R. Smith. Honorable Mention.

Entry No. 427, Catalogue No. 437. California-made Lasts. Shepherd & Russell. Silver Medal. [Awarded a Silver Medal.]

Entry No. 774, Catalogue No. 1647. Mammoth Last, Boot-Trees, etc. Wing & Brown. Diploma.

Entry No. 647, Catalogue No. 1331. Samples of Twist Mouldings. J. H. Culver. Diploma.

Entry No. 1,581. Japanese. Diploma.

All of which is respectfully submitted.

DAVID FARQUHARSON.
HENRY CASEBOLT,
JOHN WIGMORE.

DIVISION IV.—CLASS 14.

Sec. B.—CASKS, BARRELS, TUBS, PAILS, KEGS, WOOD AND WILLOW-WARE, Etc.

1268. Augustus Friedhofer, samples of Beer Barrels.
1289. Feigenbaum & Co., one Willow Sofa.
622. Mrs. E. C. Hall, Willow-ware.
913. Thurnauer & Zinn, Willow-ware and Furniture.
1309. M. Fulda & Sons, large Oval Wine Cask.
492. Feigenbaum & Co., one Willow Set.
493. Feigenbaum & Co., samples of California Willow.
758. Figer Bros., samples of Brushes of all kinds.
426. E. K. Howes & Co., samples of Wooden-ware.
1194. Lufkin & McGraw, samples of Clothes-line Holders.
1200. Feigenbaum & Co., Willow Flower Stand.
1504, 1546, 1550 and 1562. Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited in Divison IV., Class 14, Section B, beg leave to submit the following Report :

To E. K. Howes & Co., Wooden-ware, consisting of a variety of ware of excellent workmanship, we recommend the First Premium. [Awarded a Silver Medal.]

To Feigenbaum & Co., exhibit of Willow Set—Sofa, Flower-stand, etc., all of superior workmanship, and specimen of California Willow of excellent quality, we recommend the Second Premium.

To Hall's Pacific Basket Company, a fine assortment of Willow-ware, Baskets, etc., of superior workmanship, we recommend a Diploma. [Awarded a Diploma.]

To Figer Brothers, Brushes of all kinds, of excellent workmanship, we recommend a Diploma. [Awarded a Diploma.]

To Augustus Friedhofer, for Oak Barrels, of superior strength and durability, we recommend a diploma. [Awarded a Diploma.]

In the Japanese department, for fine Straw-work of different articles, Nos. 1504, 1546, 1550 aud 1562, we recommend a Diploma.

All of which is respectfully submitted.

H. C. MACY,
C. J. PRESCOTT.

DIVISION IV.—CLASS 14.

Sec. C.—FURNITURE, TABLES, CHAIRS, BEDSTEADS, Etc.

48. G. W. Pilbeam, Inlaid Work Table.
383. W. H. Jessup, Higgins' Bent Wood School Desk.
819. Geo. E. Phelan, Billiard Table.
820. Geo. E. Phelan, Billiard Table.
1282. Fred Benton, one Patent Bed Lounge.
1288. F. W. Butler, Ladies' Sewing Table.
1272. Thornton Westley, Improved Sofa Bed.
1293. " Spring Bed Bottom.
1294. " Sofa Bed.
1295. " Combined Chair and Couch.
1296. " Easy Chair and Ottoman.
1297. " specimen of improved Spiral Springs for Beds
1298. " specimen of improved Spiral Springs for Beds
1350. Goodwin & Co., Walnut Mineral Case.
1351. " " Wardrobe, Glass Door.
1352. " " Cylinder Book Case.
1353. " " Centre Table.
1354. " " Etagere.
1355. " " Sideboard.
1356. " " Bureau.
1357. " " Bedsteads.
1358. " " Commodes.
1359. " " Wash-stands.
1360. " " Parlor Set.
1361. " Rosewood Etagere.
1362. " Gilt Bouquet Table.
1363. " Walnut Desk.
1364. " Lounge, with Revolving Chair Attachment.
1365. " Patent Bed Lounge.
105. F. W. Butler, Fancy Inlaid Parlor Table.
106. F. W. Butler, Fancy Inlaid Library Table.
130. A. Smith, New England Spring Bed Bottom.
158. John Ross, Centre Table Top, Imitation Mosaic.
238. August Humburg, Patent Frame Settee with awning attached.
665. Howard Coit, one Inlaid Table.

976. Allen, Clark & Co., Automatic Parlor Bed.
1004. G. Erlin, School Furniture, Office Desks, etc.
1007. August Jungblut, Cabinets for Sewing Machines, etc.
1093. E. C. Hurlburt, Invalid's Bed and Reclining Couch.
1304. F. W. Butler, Inlaid Table.
1348. R. J. Ordway, Double-acting Spring Bed.
1492. Jacob Strahle & Co., two Billiard Tables and Appurtenances.
1493. Jacob Strahle & Co., Book-case and Desk, California Wood.
1495. Jacob Strahle & Co., set of Chamber Furniture.
1496. Jacob Strahle & Co., Inlaid Centre Table.
1497. Jacob Strahle & Co., Inlaid Wood-work Boxes, etc.
434. Cooley & Green, Patent Spring Bed.
438. W. Lord, Patent Spring Bed.
705. Wm. H. Ford, Ladies' Work Table.
496. Benjamin Collins, Chamber Set of Laurel and Black Walnut.
737. Ellsworth & Washburn, Patent School Desks.
751. J. Campbell, Woven Wire Mattrass.
1165. W. J. F. Palmer & Co., Laurel Cutlery Case.
1166. W. J. F. Palmer & Co., Walnut Mineral Case.
1453. Weichart & Freese, Black Walnut Bedstead.
1454. Weichart & Freese, Combination Desk and Bureau of Walnut.
1455. Weichart & Freese, Mahogany Show Case.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles in Section C, Class 14 of Division IV, respectfully recommend the following awards:

Entry No. 30, Catalogue No. 48. Ornamental Inlaid Table. G. W. Pilbeam. Diploma.

Catalogue No. 54, Entry No. 383. Higgins' Bent School Desk. W. H. Jessup. Diploma. [Awarded a Diploma.]

Entry No. 125, Catalogue No. 819. Billiard Table—best Cabinet work. Geo. E. Phelan. Diploma. [Awarded a Diploma.]

Entry No. 748, Catalogue No. 1350 to 1365. Best exhibit of Cabinet ware. Goodwin & Co. A Gold Medal. [Awarded a Silver Medal.]

Entry No. 252, Catalogue No. 238. Patent Frame Settee with awning attached. August Humburg. Honorable Mention.

Entry No. 312, Catalogue No. 665. Inlaid Table. Howard Coit. Best design and workmanship. A Diploma.

Entry No. 372, Catalogue No. 976. Automatic Parlor Bed. Allen, Clark & Co. Honorable Mention. [Awarded a Diploma.]

Entry No. 391, Catalogue No. 1004. School Furniture, Office Desks, etc. G. Erlin. Silver Medal. [Awarded a Silver Medal.]

Entry No. 649, Catalogue No. 1093. Invalid's Bed and Reclining Couch. E. C. Hurlburt. A Diploma. [Awarded a Diploma.]

Entry No. 683, Catalogue No. 1348. Double-acting Spring Bed. R. J. Ordway. Honorable Mention.

Entry No. 792, Catalogue No. 1492. Two Billiard Tables and appurtenances. Jacob Strahle & Co. For elegant style and finish, a Diploma. [Awarded a Diploma.]

Entry No. 424, Catalogue No. 434. Patent Spring Bed. Cooley & Green. Best on exhibition. A Diploma. [Awarded a Diploma.]

Entry No. 456, Catalogue No. 705. Ladies' Work Table. Wm. H. Ford. Honorable Mention.

Entry No. 494, Catalogue No. 737. Patent School Desk. Ellsworth & Washburn. Honorable Mention. [Awarded a Diploma.]

Entry No. 506, Catalogue No. 751. Woven Wire Mattrass. J. Campbell. A Diploma.

Entry No. 572, Catalogue No. 1266. Walnut Mineral Case. W. J. T Palmer & Co. Diploma. [Awarded a Diploma.]

All of which is respectfully submitted.

W. WALLACE SMITH.
J. B. F. DAVIS.

DIVISION IV.—CLASS 14.

Sec. D.—CARRIAGES, WAGONS, Etc.

398. J. D. Casebolt & Co.,two cases of Carriage Hardware, Lamps, etc.
1232. Pollard & Carvill, two Clarence Coaches.
1233. Pollard & Carvill, one Mountain Top Buggy.
1234. Pollard & Carvill, one Rockaway.
1235. Pollard & Carvill, two Top Buggies.
1236. Henderson & Clark, Grocery Wagon.
1237. Henderson & Clark, Open Buggy.
1266. Paul Friedhofer, Platform Spring Brewery Wagon.
1267. Paul Friedhofer, Improved Axle.
1286. Lawton & Co., Skeleton Trotting Wagon.
1369. Casebolt & Co., Rockaway.
1370. Casebolt & Co., Top Buggies.
1371. Casebolt & Co., set of Wheels.
1683. Kimball Car Manufacturing Company, display of Carriages, Buggies, Landaus, etc.
108. George A. Fuller, model Carriage Wheel with anti-friction Bearing
904. Falkingham & Sherwood, Baby Carriages.
905. Falkingham & Sherwood, Rocking-horses, Wagons, etc.
912. Thurnauer & Zinn, Child's Perambulator.
1322. Taber & Cunningham, Crockery Wagon.
1494. Jacob Strahle & Co., Laurel-Wood Buggy.
995. J. D. Arthur & Son., Box Farm Wagon.
996. J. D. Arthur & Son, Running Gear for a Farm Wagon
466. Taber & Cunningham, Milk Wagon.
777. David D. Miller, Hearse.
778. David D. Miller, Top Buggy.
780. Larkins & Co., Top Buggy.
781. Larkins & Co., Family Phæton.
782. Larkins & Co., Light Trotting Buggy
1224. David D. Miller, Carriage Body.
1199. Feigenbaum & Co., Child's Carriage.
1760. E. Soule, Farm Wagon.
1761. E. Soule, Improved Thimble Skeins.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—We, the Committee to whom was assigned the duty of awarding in Division IV, Class 14, Section D, Wagons and Carriages and such other articles as were called to our notice, beg leave to say that we have given the matter our attention, and have made the decision which we herewith submit. We are pleased and grateful to say that, in the line of Carriages, we doubt if a better display could be found in any city of the United States; and in our judgment the specimens of work offered for competition were second to none made anywhere in this or any other country.

It may appear to you that our awards are spread over many contributions, and we can only reply that the work is all No. 1; and a careful survey will convince you that we could not do less then we have done, and deal fairly and justly with all. Those who are contributors from a distance have sent us work that is worthy of special mention; and in this connection we desire to make mention of the elegant display by Messrs. O. F. Willey & Co.; but, being of Eastern manufacture, we did not consider this in competition with California manufacturers for premium. The substantial work of Messrs. Casebolt & Kerr we also commend to you as worthy of special mention; also, their Patent Wheel, which for service cannot be surpassed. [Awarded a Diploma.]

We award to Messrs. Pollard & Carvill a Gold Medal for the exhibit of fine domestic-made Clarences or Hacks, and their further display of elegant vehicles, on the ground that they have taken a step in the right direction in the investment of capital in a business which in time past has taken large amounts East, for expensive carriages, and they being, as we believe, the pioneers in this line of work. [Awarded a Gold Medal.]

We also award to Messrs. Kimball & Co. a Gold Medal for their fine display of General Rolling Stock, (a specialty being their Wood C Spring Wagons,) and their choice, tasteful light vehicles. [Awarded a Silver Medal.]

To David D. Miller, for, as *we think*, the finest Hearse ever built—a Diploma. [Awarded a Diploma.]

To Taber & Cunningham, a Diploma, for finished and unfinished Milk Wagons, of superior stock and excellence in finish, both in ironing and all the details. [Awarded a Diploma.]

To Larkins & Co., for a Doctor's Phaeton and a one-seat Trotting Wagon, we award a Diploma.

To J. H. Lawton, for a Light Skeleton Wagon, we award a Diploma.

To Henderson & Clark, for a Grocer's Wagon and a Buggy that has seen six months' use, we recommend a Diploma. [Awarded a Diploma.]

To Paul Friedhofer, for a Brewer's Wagon, we recommend a Diploma. [Awarded a Diploma.]

The exhibit of E. Soule, of a Farm Wagon, we regard in all its details as worthy of special notice, and would suggest a Diploma. [Awarded a Diploma.]

Messrs. Falkingham & Sherwood, for novelties in Child's Wagons, Hobby-horses and Carriages, a part *new* in California, and all made here, we award a Diploma.

We also propose a Diploma to Messrs. Kimball & Co., for their display in the line of Nickel plating, as a new feature, and one that will compete favorably with plated work, and is much more durable and less expensive than the use of silver.

In conclusion, we trust that this detailed report may not be considered voluminous, being anxious to demonstrate to the craft that their labor and workmanship is *all* duly appreciated, and to induce them to persevere, until all the rolling stock in California shall be made here, both here used and here worn ut, and secure for us a reputation that we do now, to a limited extent, enjoy—

that all good things come from California; then our coin will be kept here, where it belongs, and our people will feel they have a home and a country.

All of which is repectfully submitted.

J. O. ELDRIDGE.
C. G. CRITTENDEN.
G. S. BANKS.
S. A. FINIGAN.

DIVISION IV.—CLASS 15.

MANUFACTURES IN GLASS, EARTHENWARE, POTTERY, Etc.

11. Lubin & Goldstein, Bohemian Fire-proof Chimneys.
12. Lubin & Goldstein, Quaker Burners.
537. Newman & Duval, Glassware.
538. Newman & Duval, Glassware.
539. Newman & Duval, Glassware.
240 to 244, inclusive. Pacific Pottery, Sacramento Pottery, California manufacture.
618. Pacific Glass Works, Green and Black Glassware.
619. Pacific Glassworks, Carboys and Demijohns.
1310. San Francisco Glass Works, Demijohns.
1311. San Francisco Glass Works, Glass Chimneys.
1312. San Francisco Glass Works, Retorts.
1320. Albion Pottery, Pottery.
1473. Thomas O'Neil, Ground and Cut Glass.
1474. Thomas O'Neil, Stained Glass.
495. Henry G. Hoefer, Looking Glass.
779. C. Newman, Patent Self-sealing Fruit Jar.
1195. S. & G. Gump, two Piers and one Mantel Mirror.
1758. F. H. Rosenbaum & Co., one Large Mirror.
1513 to 1,545, inclusive, and 1,550, 1,556, 1,558 to 1,590, inclusive, 1,591, 1,592, 1,593, 1,595, 1,597, 1,600, 1,601, 1,627, and 1,632, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee appointed to examine and adjudge articles exhibited in Class 15 of Division IV, beg leave to submit the following report :

To Catalogue No. 11, Messrs Lubin & Goldstein, Chimney and Burner combined, a Diploma.

Nos. 537 and 538. Messrs. Newman & Duval. Samples of Glassware of good form, and metal pure and brilliant.

No. 539. By the same firm. Samples of Flint Glassware. Excellent.

Nos. 1310 and 1311. San Francisco Glass-Works. Only a few samples, but choice and ornamental.

Nos. 1473 and 1474. Specimens of Ground, Cut and Stained Glass, exhibited by Thomas O'Neil. Excellent in quality and design. No competition.

No. 1758. Mammoth Mirror, from the establishment of F. H. Rosenbaum & Co., San Francisco. First quality.

No. 1195. Pier Glasses and Mantel Mirrors, exhibited by S. & G. Gump. Excellent specimens of design and ornamentation.

No. 1320. Vases, Fountains, etc., from Albion Pottery. First quality.

Nos. 240 to 244. Samples from Pacific Pottery, Sacramento. Fair quality.

All of which is respectfully submitted.

ROBERT MILLS,
JOHN BREWSTER.

DIVISION IV.—CLASS 16.

MANUFACTURES IN LEATHER, RUBBER AND GUTTA PERCHA.

567. Wildman & Marble, two Wooden Horse-Collars and Harness combined.
831. D. Samuels, samples of Gloves made of different kinds of skins.
835. A. Levy, Wooden Trunk, made in the year 1674.
1240. Wm. Joiner, two pair of Boots.
1244. Buckingham & Hecht, samples of Mens', Boys', Ladies' and Childrens' Boots and Shoes.
1245. Buckingham & Hecht, samples of Cow, Kip and Calf Leather.
1250. John Munro, Merriman's Life Preserver.
1259. P. Kelly, three cases of Ladies' and Gentlemens' Boots and Shoes.
1279. John Ashton, part of a set of Dutton's Improved Double Harness.
1414. Edward Galpen & Co., samples of Bags, Trunks and Valises.
215 to 228, inclusive. Main & Winchester, Harness Material.
246 to 250, inclusive. Pacific Tannery, Stockton, samples of Leather.
603. Gutta Percha Manufacturing Co., Rubber Hose—white.
604. Gutta Percha Manufacturing Co., Rubber Hose—black.
940. F. X. Kast, Boots, Shoes, Slippers, etc.
965. E. T. Buckman, Sonora, Texas Saddle-tree.
1013. H. Behrend & Co., Trunks and Valises.
1318. H. Royer, Leather Belting, etc.
708. Dietel & Beck, Custom-made Boots and Shoes.
1161. S. K. Dodge, Buckskin Gloves.
1738. M. M. Cook & Son, samples of Leather, Belting, Hose, etc.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

We, the undersigned Committee, appointed to examine articles exhibited in Division IV, Class 16, beg leave to submit the following report :

To No. 831, samples of Gloves, exhibited by D. Samuels, we recommend Honorable Mention. [Silver Medal awarded.]

Nos. 1244 and 1245. Samples of Mens', Boys', Ladies' and Childrens' Boots and Shoes, exhibited by Buckingham & Hecht, we consider deserving of more extended notice and high commendation, on account of the very extra good quality of the Leather, being all Calf, Kip and Upper Leather, which is manufactured into Boots and Shoes by the same firm, the same being of equally good quality with the very best manufactured in the United States. We think, too, the moral as well as the financial effect of this large manufactory should not be lost sight of. This factory gives employment to about three hundred men and women, and to many youths who would be otherwise running the

streets in idleness. The same firm are now putting up an additional building that will accommodate as many more. They have saved millions of dollars, to be distributed in building up our city, that has heretofore been sent to the Eastern States and Europe for Boots and Shoes. For their enterprise, and the excellence of their work, we consider them justly entitled to a Gold Medal. [Awarded a Silver Medal.]

No. 1259. A fine display of Custom-made Boots and Shoes, by P. Kelly, deserves a Premium. [Awarded a Diploma.]

No. 708. Fine Custom-made Boots and Shoes. Dietel & Beck. Fourth Premium. [Awarded a Diploma.]

No. 1279. Dutton's Improved Harness, exhibited by John Ashton, deserves Honorable Mention. [Awarded a Diploma.]

No. 1013. Trunks and Valises, H. Behrend & Co. Third Premium. [Awarded a Diploma.]

No. 1414. Trunks and Valises, Edward Galpen & Co. Fourth Premium. [Awarded a Diploma.]

Nos. 693 and 604. Rubber Hose, Gutta Percha Manufacturing Company. Fourth Premium.

No. 215 to 228. Saddles, Bridles and Harness, exhibited by Main & Winchester. First Premium. [Awarded a Silver Medal.]

No. 965. Texas Saddle-Tree. E. T. Buckman, Sonora. Honorable Mention.

246 to 250. Samples of Leather. Pacific Tannery, Stockton. Honorable Mention. [Silver Medal awarded to Kullman, Wagner & Co., Proprietors.]

No. 1318. Leather Belting. H. Royer. Diploma. [Awarded a Diploma.]

No. 1738. Leather Hose. Diploma.

No. 1161. Buckskin Gloves. S. K. Dodge. Diploma.

All of which is respectfully submitted.

WILLIAM FLETCHER.
J. R. HUGHES.

DIVISION IV.—CLASS 17.

MANUFACTURES OF WOOL, COTTON AND SILK, FURS, Etc.

876. Brown Brothers & Co., for the Oregon City Woolen Manufacturing Company, assorted Cassimeres, Blankets, Yarns, Underclothing, etc.
1281. H. Liebes & Co., samples of Furs and Buggy Robes.
901. Alexander Mackay, Domestic Carpet, List and Rag.
903. H. Liebes & Co., assortment of Buggy Robes and Skins.
914. Lancaster & Co., Custom-made Pants.
915. Lancaster & Co., Custom-made Coats.
916. Lancaster & Co., Patterns for Coats and Pants.
912. H. Liebes & Co., display of Furs.
997. Tobin, Davisson & Co., American Silks.
998. Tobin, Davisson & Co., Silk Ribbons.
1006. Joseph Brothers, Youth's and Children's Clothing.
1014 to 1022 inclusive, Charles Gentile, Articles of Indian Wearing Apparel, etc., from Arizona.
1056. Joseph Figel, Youth's and Childrens' Clothing.

1070. S. Figel, Youth's and Children's Clothing.
793. S. Mosgrove & Co., American Silks.
1133. Mission & Pacific Woolen Mills, Blankets.
1134. " " Cloths, etc.
1135. " " Flannels, Cloakings, etc.
1136. " " Gents' & Ladies' Shawls & Scarfs.
1137. " " Carriage and Horse Blankets.
1138. " " Military Cloth.
1139. " " Flannel Underwear.
1140. " " All Wool Underwear.
1141. " " Hosiery.
1142. " " Woolen Yarn, etc.
283. H. Friedlander & Co., Ladies' and Gentlemen's made up Underwear.
1780. California Silk Company, Raw and Manufactured Silk.
1618, 1619, 1621, 1622, 1631, 1633, 1634, 1638 and 1639, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited and competing for premiums at the above Exhibition, in Division IV, Class 17, beg leave to submit the following report:

Entry No. 560, Catalogue No. 1133 to 1142 inclusive. Mission and Pacific Woolen Mills. For the best quality and display of Knit Goods and Blankets. Gold Medal. [Awarded a Gold Medal.]

Entry No. 155, Catalogue No. 876. Oregon City Woolen Mills. For fine Cassimeres. Silver Medal. [Awarded a Silver Medal.]

Entry No. 560. To the Mission and Pacific Woolen Mills, for fine Cassimeres, a Diploma.

Entry No. 901, Catalogue No. 1780. To the California Silk Company, best Raw and Manufactured Silk, Silver Medal. [Awarded Gold Medal.]

Entry No. 386, Catalogue No. 997, 998. Cheney Bros. For American Silks, Diploma. [Awarded Gold Medal.]

Entry No. 370, Catalogue No. 973. H. Liebes & Co. For best display of made-up Furs, Diploma. [Awarded a Diploma.]

To Joseph Lancaster, for Custom-made Clothing, Society's Diploma. [Awarded a Diploma.]

To Joseph Brothers, for best display of Boy's Clothing, Society's Diploma. [Awarded a Diploma.]

S. Figel, for best Youth's Military Clothing, Society's Diploma. [Awarded a Diploma.]

To J. Figel, for display of Men's and Boy's Clothing, Society's Diploma. [Awarded a Diploma.]

To Chinese exhibit of Raw and manufactured Silk, Society's Diploma. [Awarded a Diploma.]

To Japanese, exhibit of Raw aud manufactured Silks, Society's Diploma.

All of which is respectfully submitted.

ELKAN WASSERMAN.
WILLIAM G. BADGER.
WILLIAM RYLE.
J. L. BROOKS.

DIVISION IV.—CLASS 18.

MANUFACTURES FROM FIBRES AND PULP, HEMP, MANILA, FLAX, RAMIE, Etc.

43. A. Gerberding, Patent Ore Bags.
561. Frederick Nanns, two Table Cloths and Napkins.
166, to 170, inclusive. S. P. Taylor & Co., samples of California-manufactured Paper.
245. Tubbs & Co., Rope, California manufacture.
990. Oakland Cotton Mills, samples of Burlaps, Twines, etc.
461. Oakland Cotton Mills, samples of Burlaps and Jute Yarn.
1130. J. L. Macfarlane, Auckland, N. Z., nine coils of White Rope.
1131. J. L. Macfarlane, Auckland, N. Z., four coils of Lubricated Rope.
1549, 1566, to 1586 inclusive, 1572, 1573, 1575, 1576, 1577, 1578, 1580 and 1629, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine articles exhibited in Division IV, Class 18, beg leave to submit the following report :

43. Patent Ore Bags, claim to be water and acid proof, by reason of an inner coating; and to prevent the escape of ore dust. There would be merit if they could be relied upon, but of this there is no evidence.

166 to 170. California-made Wrapping Paper and a single package of Newspaper. This is the only exhibit of domestic paper. It merits a Diploma. [Awarded a Diploma.]

245. California Rope of excellent character; merits a Certificate. [Awarded a Diploma.]

1130. New Zealand Rope, reported in Division I, Class 2.

461 and 990. California Burlaps, Twines and Jute Yarn, of excellent quality. This is a new industry that demands recognition. We suggest a Silver Medal. [Awarded a Silver Medal.]

Japanese articles are reported in an extra paper.

All of which is respectfully submitted.

J. S. SILVER.

DIVISION IV.—CLASS 19.

UPHOLSTERY, CARRIAGE TRIMMING, PAPER HANGINGS, DECORATIONS, Etc.

547. M. E. Austin, Drop Curtain Fixture.
858. George W. Clark, specimens of Paper Hangings.
859. " House made of Rock River prepared Plastering Board, Sheathing, Roofing and Felting.

860. George W. Clark, Window and Rustic Shades.
1223. John D. Barr, two cases of Umbrellas and Parasols.
1243. G. W. Clark, samples of Paper Hangings representing Perspective and Tropical Scenery.
1049. Hall & Lachman, display of Window Draperies.
1337. Frank G. Edwards, Paper Hangings, Decorations, etc.
401. Reed, Hoagland & Newsom, model of Window Screen.
439. Hollihan and Burbridge, Rustic Window Shades.
499. Henry G. Hoefer, Window Screen.
702. W. L. Perkins & Co., Paper Collars and Cuffs.
749. Hartshorn & McPhun, Self-acting Window Shades, Roller, and samples of Window-shade manufacture.
752. Marquis & Newsom, Metallic Sash Line.
1118. Ruth B. Slocum, specimens of Leather Upholstering.
1170. S. A. Goldstein, Paper Collars.
1556, 1573 and 1575. Japanese.

To the President and the Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

We, the Committee appointed to pass on Class 19, Division IV, would report that we have examined the articles enumerated in said Section, and would recommend that such premiums as in your judgment may seem best, be given for the following articles:

547. A Drop Curtain, so arranged as to be a fixture at any desired point. This we recommend over all curtain fixtures exhibited. M. E. Austin, exhibitor.

1337. Paper Decorations exhibited by Frank G. Edwards. This we consider as worthy the First Premium. We also recommend a favorable notice of the Printing of Wall Papers as presented and prosecuted during the Fair.

858. Fresco Paper, exhibited by G. W. Clark, is, we believe, an imported article; but good workmanship is displayed in its arrangement, and it is worthy of due consideration. We leave the matter in your hands.

860. Rustic Shades, exhibited by G. W. Clark. This being a new feature of goods manufactured in this State, we believe it worthy of an especial notice, and cheerfully recommend it to a favorable consideration at your hands and a First-class Award.

1223. Umbrellas and Parasols, exhibited by J. D. Barr. We find but one person submitting such goods, and these, we are free to confess, are of a class that customers should be proud of. We recommend them favorably.

1049. Is a very fine display of Lace and other Drapery for Windows. The exhibitors, Hall & Lachman, receive our unqualified approbation, and we most cheerfully recommend to them a Premium.

401. A first-class Window Screen, and as such we recommend it. Exhibitors, Reed, Hoagland & Newsom.

439. Rustic Window Shades, being an article manufactured on this coast, is worthy of consideration.

752. Exhibited by Newsom of San Francisco. This we consider a good improvement on the old style of arranging Sash Weights, and is worthy of First Premium.

We have in the foregoing embraced all that we consider as belonging to our department, save Japanese Goods; and to the very large assortment of these entrusted to us we can but say that they are of such a character, and our experience is so limited, that we prefer leaving the many articles in your hands, trusting the exhibitors will receive a just and true award for the zeal and energy displayed in presenting so varied and beautiful an assortment of curious as well as useful articles.

After mature consideration of the matter, your Committee have agreed to recommend the following awards for your consideration:

Entry No. 95, Catalogue No. 547. Drop Curtain Fixture. M. E. Austin. Diploma. [Awarded a Diploma.]

Entry No. 95, Catalogue No. 548. Stationary Curtain Fixture. Honorable Mention.

Entry No. 143, Catalogue No. 858. Specimens of Paper Hangings. G. W. Clark. Honorable Mention.

Entry No. 143, Catalogue No. 860. Window and Rustic Shades. G. W. Clark. Honorable Mention.

Entry No. 186, Catalogue No. 1223. Umbrellas and Parasols. J. D. Barr. Diploma. [Awarded a Diploma.]

Entry No. 706, Catalogue No. 1243. Samples of Paper Hangings. G. W. Clark. Diploma. [Awarded a Diploma.]

Entry No. 613, Catalogue No. 1049. Display of Window Drapery. Hall & Lachman. Honorable Mention.

Entry No. 678, Catalogue No. 1337. Paper Hangings, Decorations, etc. F. G. Edwards. Diploma. [Awarded a Diploma.]

Entry No. 401, Catalogue No. 401. Window Screen. Reed, Hoagland & Newsom. Honorable Mention.

Entry No. 429, Catalogue No. 439. Rustic Window Shades. Hollihan & Fried. Honorable Mention. [Awarded a Diploma.]

Entry No. 466, Catalogue No. 499. Window Screen. H. G. Hoefer. Honorable Mention.

Entry No. 470, Catalogue No. 702. Paper Collars and Cuffs. W. L. Perkins. Diploma. [Awarded a Diploma.]

Entry No. 504, Catalogue No. 749. Self-acting Window Shade Roller, and sample of Window Shade manufacture. Hartshorne & McPhun. Honorable Mention. [Awarded a Diploma.]

Entry No. 584, Catalogue No. 1170. Paper Collars. S. A. Goldstein. Honorable Mention.

1556, 1563 and 1575, Japanese. Diploma.

All of which is respectfully submitted.

JOHN F. LARRABEE.
T. RODGERS JOHNSON.

DIVISION V.

ENGINEERING AND ARCHITECTURE.

Although the business of Ship Building has for years past maintained a prominent position among the industries of San Francisco, the exhibition in the department of Naval Architecture was by no means so large as might reasonably have been anticipated. Notwithstanding its meagre character, however, the collection of models of vessels and the various appliances connected with the business of Navigation, embodied some substantial and valuable improvements, the merits of which will undoubtedly call them into general use.

In the department of Military Engineering, the samples of Fire-arms were highly creditable to our home manufactures, and in point of superior finish

and excellence of workmanship were pronounced by competent judges in all respects equal to the best manufactured abroad.

Owing to the large quantities of the article consumed in the extensive mining and railroad operations on this Coast, the manufacture of Powder is an important interest. Two establishments, with all of the necessary apparatus and machinery for the manufacture of Powder on an extensive scale, have been in successful operation in this State. One of these has, however, for the past season temporarily suspended. As sulphur exists in large bodies in accessible localities, and there being no want of wood of the proper quality for charcoal, two of the essential ingredients are close at hand—the nitre used only being required from abroad.

The California Powder Works, located at Santa Cruz, have been in successful operation since May, 1864, and the excellence of the various grades of Powder manufactured is fully attested by the report and award of the Committee passing upon their merits.

The Committee also pay a deserved tribute to the excellence of the Giant Powder for its especial adaptation to the uses and purposes for which it is intended. Innumerable accidents having occurred from the dangerous nature and too often criminal carelessness in handling explosives in common use, human ingenuity has been taxed to its utmost to devise some equally powerful article, devoid of the risk of accident. While not at all deficient in force and effect, in the language of the Report of the Committee, the great merit of the Giant Powder consists in its safety from accidental explosion, and in the storing, handling and transportation of this powerful compound. The value of these qualities have been duly considered by both the Examining and Award Committees.

In the class comprised under the head of Civil Engineering and Architecture, a large and varied exhibit was made, embodying some real and substantial improvements, which redeem a large amount of useless rubbish. Many of the models of bridges and other structures, architectural and other drawings, were of an interesting and useful character. The extensive exhibit made by the Pacific Wood Preserving Company, of samples illustrating the stages of decay in the different varieties of timber in common use, and the success of this Company in the preparation of woods so as to fully resist these attacks, attracted much attention during the course of the Exhibition. The preservation of timber in general use from the ravages of rot and the attacks of the terredo, being a matter of paramount importance, the Committee of Awards, after a thorough test of the usefulness and value of the process employed, considered its merits fully entitled to the highest-class premium.

The same conclusion was arrived at in regard to the extensive and varied exhibit made by the Pacific Stone Manufacturing Company. The substantial and durable character of this manufacture for building purposes being fully established—this material being employed in the construction of a large and elegant church in progress of erection—together with its admirable adaptability to every style of ornamental work, secured the award of a First Premium.

DIVISION V.—CLASS 20.

NAVAL ARCHITECTURE AND ENGINEERING.

16. G. A. Lloyd, model of a Boat-detaching Apparatus.
386. J. N. Phillips, models of Schooner.
837. G. A. Lloyd, two models of Patent Anchors.
276. John E. Kennedy, Screw Propeller.
747. George W. Dickie, Drawing and Models of Composite Vessels.
1180. Albert H. Law, Model of an Anchor.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee to whom was referred articles exhibited in Division V, Class 20, beg leave to submit the following report :

Entry No. 11, Catalogue No. 16. Boat-detaching Apparatus ; has a chain passing fore and aft, over the kelson, up through the ring-bolts at each end. On the chain is a bent lever, which is secured by a large link to the ordinary purchase block ; a small capstan is arranged under the after thwart, around which the chain passes, the slack is taken up and the levers secured at the ends of the boat. When it is desirable to detach the boat, it is merely necessary to slacken the chain around the barrel of the capstan, which is done by one lever placed under the thwart. This idea is an excellent one ; it is cheap, simple of construction and reliable. As it is a new invention, we recommend a Medal. [Awarded a Diploma.]

Entry No. 587, Catalogue No. 1180. Brass Model of a Jointed Anchor. Quite ingenious.

Entry No. 137, Catalogue No. 837. Two Models of Patent Anchors, Lloyd's and Stewart's Patent Anchor has many good qualities, has been tried in the Revenue Service and reported favorably upon. We recommend a Diploma.

Entry No. 265, Catalogue No. 276. John E. Kennedy's Patent Screw Propeller, upon the blades of which are lines purporting to show the course which the water takes in propelling. This invention is ingenious and deserves commendation ; it is thought by some conversant with this subject, however, that taking all things into consideration, the true screw, with expanding pitch, accomplishes all that can be obtained in screw propulsion.

Entry No. 502, Catalogue No. 747. George W. Dickie. These are a series of Models and Drawings designed to illustrate this method of building, which has been in practical use for some years past. Mr. Dickie, the architect and exhibitor, says that his principal object is to show the people of this coast a design from which they can construct their own ships at a slight increase of cost over the cost in Scotland. He explains that the iron could be imported from England in such a shape that, with the facilities which are to be had here, an excellent and durable ship could be constructed.

The frames and stringers of his ships are of iron, while the planking is of wood. The Drawings are neatly executed, and the dimensions and proportions of his Models are good. An advantage which might be claimed for this class of vessels—and possibly the principal one—is, that having the outside of wood, there is no necessity of a foul bottom, as it can be covered with copper, as in the case of wooden ships. It is very creditable to Mr. Dickie that he should make such an exhibition, and his plan is well worthy of the serious examination of those who are desirous of increasing the tonnage of San Francisco. The fact that many successful ships have already been constructed upon this plan is in itself a sufficient recommendation of its usefulness ; and in a country where but little large crooked timber is growing, the iron frames will make the best substitute. The Committee, however, incline to the opinion that steamers should be constructed wholly of iron, when we take into consideration the danger of faulty construction, and the rotting of the wood.

We earnestly commend Mr. Dickie for his endeavors to supply a want much needed, and hope the day is not far distant when constructions wholly of iron may be made in the port of San Francisco. We recommend a Diploma. [Awarded a Diploma.]

SAMUEL H. POOK,
Naval Constructor U. S. N.
R. H. WATERMAN.
W. R. ECKART.

DIVISION V.—CLASS 21.

MILITARY ENGINEERING AND ARCHITECTURE.

100. William H. Myers, Gun used by Daniel Boone in Kentucky.
864. John Domingos, Hunt's Fan and Fly Drawer.
872. Bandmann, Neilson & Co., case of Giant Powder.
1283. Thomas Hill, Steam Ram.
1284. Thomas Hill, Trunnion.
293 to 297, inclusive. Villegia & Slotterbeck, Guns and Sporting Materials.
959. T. Rodgers Johnson, Military Sword.
1321. Alfred Swingle, Rifles, Shot-guns, etc.
1475. Liddle & Kaeding, Fishing Tackle.
706. Thomas Cullen, Magazine Repeating Rifle.
491. N. Curry & Bros., Guns and Sporting Materials.
746. California Powder Works, samples of different kinds of Powder.
771. Liddle & Kaeding, three cases of Guns, Pistols and Sporting Materials.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

We, the undersigned jurors, appointed by the Board of Managers of the Industrial Fair of 1871, to examine and adjudge articles on exhibition in Class 21, Division V, do recommend that the following premiums be awarded :

First Premium to Giant Powder Company. Entry No. 153, Catalogue No. 872, for Giant Powder, an article of California manufacture, and of great importance in all mining and blasting operations.

From the experiments made by the Committee, the Giant Powder exhibits the following merits:

Safety against explosion from fire
Safety in storing, handling and transportation.
Rapidity and force of explosion.

The Committee are of opinion that the Giant Powder is of the utmost importance for all mining and blasting purposes, and is entitled to the highest premium at the disposal of the Committee of Final Awards. [Silver Medal Awarded.]

First Premium to California Powder Works. Entry No. 501, Catalogue No. 746, for Sporting, Rifle and Blasting Powder. The display of the various kinds of Powder manufactured by this Company is unusually large and complete. [Awarded a Silver Medal.]

Third Premium to Entry No. 279, Catalogue No. 293 to 297. Villegia & Slotterbeck, for fine exhibit of Shot-guns, various other arms and Sporting materials. [Awarded a Diploma.]

Third Premium to Entry No. 522, Catalogue No. 771. Liddle & Kaeding, for fine display of Telescopic Rifles, Guns, Pistols and Sporting Materials.

Third Premium to Entry No. 463, Catalogue No. 491. N. Curry & Bros., for fine exhibit of Carbines, Pistols and other Sporting Materials. [Awarded a Diploma.]

Third Premium to Entry No. 718, Catalogue No. 1475. Liddle & Kaeding, for large display of Fishing Tackle. [Awarded a Diploma.]

The Committee make favorable mention of the following articles of California manufacture:

Entry No. 667, Catalogue No. 1321. Alfred Swingle, Guns and Rifles. [Awarded a Diploma.]

Entry No. 457, Catalogue No. 706. Thomas Cullen, Magazine Repeating Rifle.

For want of the necessary time, conveniencies and opportunities, no trial or experiment could be made with these arms, and of course no recommendation for premiums can be offered.

The committee have selected Gen. E. O. C. Ord as delegate to attend the meeting for electing a Committee of Final Award.

E. O. C. ORD, Brev. Maj.-Gen. U. S. A.
M. P. SMALL, Brev. Brig.-Gen. U. S. A.

DIVISION V.—CLASS 22.

CIVIL ENGINEERING AND ARCHITECTURE.

9. George A. Bordwell, Isometrical Drawing.
24. C. H. Foster, Earthquake Truss.
33. " Design for an Iron Roof.
34. Francis Lambert, Samples of Los Angeles Unbaked Brick, with description.
80. Charles S. Preble, Architectural Drawing.
81. " " "
87. A. S. Hallidie, Patent Rigid Suspension Bridge.
88. E. H. Elmquist, Drawing of Engine and Tender.
370. George Schmitt, six Drawings of Carriages of styles from A. D. 1800 to 1810.
371. George Schmitt, 32 Drawings of Carriages of styles from A. D. 1840 to 1860.
372. George Schmitt, eight Free-hand Drawings.
373. " Plan of the City of Jerusalem.
374. " Plan of Christ's Sepulchre.
857. William Carr, Model of Sectional Wood Pavement.
1226. J. Touaillon, Model of Earthquake-proof Building.
1239. Lilyenberg Bros., twenty frames of Carriage Drawings.
1264. Brignardello Bros., large Block of Marble.
1269. City Paving Company, samples of Preserved Wood Pavement.
1270. Pacific Wood Preserving Company, exhibits of Preserved and Unpreserved Woods and other materials for Pavements, Wharves, etc., and articles used in process.
107. Pacific Bridge Company, Model of Patent Truss Bridge.
623. J. H. Plath, eighteen Drawings of Carriages, Coupes, etc.
969. James E. Wolfe & Son, Architectural Drawings.
989. John Daniels & Co., two Marble Mantels and Grates.
1317. Asphaltum Pressure Pipe Company, samples of Asphaltum Pressure Pipe.
408. Grosvenor Francis, Model of Improved Bridge.
471. Traverse & Wagner, French Burr Mill Stones.
712. Ernst Mubins, fifteen Drawings of Carriages.
713. " specimens of Free-hand Drawing.
1650. J. W. Bones, Architecturnl Drawings.
233. L. R. Townsend, Architectural Drawings.
671. Pacific Stone Company, display of Manufactured Stone.
1201. Skinner & Bonnett, samples of Imperishable Stone Block Pavement.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee appointed to examine and adjudge articles exhibited in Class 22, of Division VI, beg leave to submit the following report :

For general practical use and public benefit we do not hesitate to pronounce the Stow Foundation Pavement, exhibited by the City Paving Company, together with the actual tests of its durability, as presented by the wear and tear in the streets of San Francisco, to be superior to all others, when, taking into consideration the method of laying it, the time it has been laid, the form of its construction, and by an honest comparison with others which have been submitted to the same test. [Awarded a Silver Medal.]

To Entry No. 725, Catalogue No 1269, samples of Preserved Wood Pavement, by the City Paving Company, we award the First Premium.

The Pacific Wood Preserving Company, having made so clear and satisfactory proof of the great value of their invention by the many evidences of the actual test in the preservation of various woods, such as piles, flooring, pavement, etc., under the head of Catalogue No. 1270, Entry No. 726, we recommend First Premium. [Awarded Gold Medal.]

We recommend a Second Premium for Entry No. 721, Catalogue No. 1264. Large Block of Marble, exhibited by Brignardello Bros.

We recommend, also, a Second Premium for Catalogue No. 471, Traverse & Wagner, French Burr Millstones.

Catalogue Nos. 9, 24, 33, 80, 81, 87, 88, 370, 371, 372, 373, 374, 1239, 107, 116, 623, 969, 989, 1317, 712, 713, 1650, 233, 859, 408. We recommend a Third Premium to each of the foregoing, as named in the Catalogue.

Diplomas were awarded as follows : No. 24, Charles H. Foster, Earthquake-proof Truss ; No. 33, Charles H. Foster, Design for Anchor Roof ; No. 370, George Schmitts, Drawings of Carriages ; No. 107, Pacific Bridge Company, Model of Smith's Patent Truss Bridge ; No. 989, John Daniels & Co., Marble Mantels, home manufacture ; No. 623, J. H. Plath, Architectural Carriage Drawings ; No. 1650, Bones & Pearson, Architectural Drawings ; No. 1317, Asphaltum Pressure Pipe Co., samples of Pipe.

To Block Pavement, exhibited by Skinner & Bonnet, we recommend Honorable Mention. [Awarded a Diploma.]

Catalogue No. 671, Entry No. 317. Samples of Manufactured Stone. The person in attendance not having the courtesy to rise from his seat and explain anything in connection with the articles exhibited, we leave for some other Committee to report thereon. [Awarded a Gold Medal.]

Catalogue No. 34, Entry No. 22. Samples of Unbaked Brick. No person being in attendance to explain their peculiar merit, or the science connected therewith, we have no report to make.

Catalogue No. 1226, Entry No. 189. Earthquake-Proof Building. No person being in attendance to explain the theory upon which a break may be made in the shock, how to switch an earthquake off its course, whether oscillatory or undulatory, or take out the twist by stopping the electric current; how the fires are to be banked in a subterraneous fire-room to keep down an upheaval, or how to keep buildings on balls with no underpinning, as represented by the models exhibited, your Committee most respectfully beg leave to refer the examination to "Caxton," or some other person more familiar with this science than ourselves.

All of which is respectfully submitted.

EDWIN A. SHERMAN.
JOHN V. HUNTER.

DIVISION VI.

WORKS OF ART.

In the Department of the Fine Arts, although a large variety of specimens were exhibited, quantity rather than quality was its predominating feature; and, while the collection contained many admirable specimens, creditable alike to the artist and the spirit of encouragement so liberally extended to his efforts, there was much that might indeed be justly classed below mediocrity. California has presented many themes for the employment of the genius and skill of both the Painter and Sculptor—to the Landscape Painter especially has her sublime and romantic scenery afforded a wide field for the exercise of his pencil, and in the hands of masters of this attractive School of Art, the reproduction of noted portions of our magnificent mountain scenery upon the glowing canvas has commanded princely prices from men of wealth and refined taste abroad.

While with the exceptions noted, there was but a limited number of really excellent paintings to be found on the walls of the Art Gallery, the number and excellence of the specimens exhibited by our Photographic Artists was the subject of general remark and commendation from the numerous throng of visitors as well as favorable notice in the columns of the public press. Every ramification and shade of this Protean creation was appropriately represented, and, as will be seen from the list of Awards, each exhibitor received due credit for excellence in some particular feature. The purity of the atmosphere of this region is assigned as the principal reason of the superiority of the sun pictures executed here. Admitting this to be the case, our artists in this popular department, which exerts such a refining influence in all the varied walks of life, are in nowise behind their Eastern brethren in point of artistic taste and skill. The admirable photographs of California scenery executed by our own artists have rendered our most noted places famous throughout the civilized world.

In the working of the precious metals, a more favorable field for the exercise of skill and taste in design and artistic execution could nowhere be found. The elegance of the rich variety of articles produced by our skillful workers in gold and silver, and the superior workmanship of the lapidaries pursuing their different vocations here, has long been the subject of remark by the visitor from abroad. Upon the discovery of gold in California a large number of skilled workmen in the branches named emigrated here from foreign countries, and they have had "ample room and verge," for the exercise of their taste and skill.

DIVISION VI.—CLASS 23.

PAINTING IN OIL AND WATER COLORS, CHROMOS, CRAYONS, Etc.

1. Jacob Grunnagle, Drawing of a Steam Fire Engine.
3. T. C. Boyd, Water-color Painting.
4. " "
5. " "

7. Alfred Burr, Pencil Drawing.
8. " Ink Drawing.
38. James Syme, Water-color Painting.
39. " " "
40. " " "
41. " " "
42. " " "

52. A. Hart, Oil Painting.
53. " "
54. " "
55. " "
56. " "
57. " "
58. " "
59. " "
60. " "
61. " "

64. Julia Kenney, Crayon Drawing.
65. " Crayon Drawing.
66. Miss Ella Day, Crayon Drawing.
67. H. H. Moore, Oil Painting.
68. " Oil Painting.

69. Domenico Tojetti, Oil Painting.
70. " "
71. " "
72. " "
73. " "
74. " "
75. " "
76, " "
77. " " (Cartoon.)
78. " "
69. " "

84. Miss Blanche Lalande, (14 years of age,) Crayon Drawing.
85. Miss Alice H. Lalande, Crayon Drawing.
94. Mrs. M. P. Benton, Oil Painting.
95. " "
96. " "
97. " "
98. " "

99. Oscar Kallschmidt, Oil Painting.

349. Mrs. E. R. Sleeper, Pastel Painting.
350. " "
351. " "
352. " "
353. " "
354. " "
355. " "
356. " "

364. Ernest Narjot, Oil Painting.
365. " "
366. " "
367. " "
368. " "

391. Gustavus Fagersteen, Pastel Portrait.
399. James A. Kerr, Water-color Paintings.
400. " "

501. W. C. Butler, Drawing in India Ink.
502. " Drawing in India Ink.

509. Mrs. Ball, Crayon Picture.
510. " "
511. " "
512. " "
514. Mrs. M. M. Hardy, Crayon Picture.
515. " " Oil Painting.
535. Mrs. M. G. Turner, Crayon Drawing.
540. " " "
541. " " "
542. Miss Ada Van Winkle, Pastel Drawing.
543. " Water-color Sketch.
544. " Crayon Drawing.
545. " "
563. Miss. L. E. Andrews, Oil Painting.
564. " "
565. " "
566. " "
569 to 583, inclusive. Mrs. W. Irelan, Water-color Sketches of Flowers and Birds.
802. E. B. Crocker, Oil Painting, Rape of the Sabines, by Charles Nahl.
803. E. B. Crocker, Oil Painting, Rape of the Sabines, by Charles Nahl.
804. Charles Nahl, Oil Painting.
807. Frank C. Ball, Oil Painting.
824. Charles D. Shed, Oil Painting.
825. " Oil Painting.
833. Miss M. J. Benton, Oil Painting.
834. " Crayon Drawing.
883. Mrs. L. E. Andrews, Water-color Sketch.
886. Oscar Kallschmidt, Water-color Sketch.
895. A. Hart, Oil Painting.
1272. Frank C. Ball, Portrait in Oil.
1277. Schmidt & Burkhardt, Chromo.
1278. " Passe Partout.
1300. Theodore Butler, Pencil Drawing.
118. Miss Hattie Phipps, Pen Drawing.
119. " Pen Drawing.
132. Mrs. Wm. Higby, Water-color Painting.
143. Oscar Kallschmidt, Drawing in India Ink.
144. " Portrait in Oil.
145. " "
146. " "
147. " "
148. " "
149. " "
150. " "
152 to 156 inclusive. B. C. Turnbull, Pen and Ink Drawings.
163. J. M. Tracy, Oil Painting.
164. J. M. Tracy, Oil Painting.
173 to 199, inclusive. J. L. Bardwell, Oil Painting.
200 to 208, inclusive. Oscar Kallschmidt, Oil Paintings.
209 to 211, inclusive. J. L. Bardwell, "
236. Miss Martha Todd, Pastel Painting.
695. Wm. Blair, Oil Painting.
922 to 925, inclusive. G. I. Denny, Oil Painting.
933 to 938, inclusive. W. L. Marple, Landscapes in Oil.
949. Pacific Business College, nine specimens of Pen Drawings.
984. Ernest Narjot, Portrait in Oil.
991 to 994, inclusive. Hon. John H. Saunders, Oil Paintings.
1040. Mr. and Mrs. De Fossey. three Crayon Drawings.
1041. " Water-color Sketch.

1308. Mrs. C. I. Lynde, Oil Painting.
1323. Mrs. M. G. Gerrish, Poonah Painting.
1227 to 1229, inclusive. Kingstonian Method of Painting.
402. Edward Godchaux, Oil Painting.
417 to 421, inclusive. Mrs. A. Beebe, Oil Paintings.
425. Alonzo Coffin, Pencil Drawing.
427. George Jebens, Pencil Drawing.
428. " "

440. Thomas Ross, Oil Painting.
1501, 1556 and 1571. Japanese.
444, to 446, inclusive. Henry White, Medley Pictures.
452. Frank H. Darling, Oil Painting.
453. " "

454. S. M. Brooks, Oil Painting.
470. Oscar Kallschmidt, Oil Painting.
494. Thomas Bryan, Oil Painting.
496. Henry G. Hoefer, Portrait in Oil.
497. " Portrait.
498. " Four Chromos.

715. Luz Acosta, Study, after a Cast.
716. " Study.

718. Mrs. M. McHenry, Portrait in Oil.
794. H. J. Burns, Oil Painting.
796. Mrs. A. E. Wilson, two Pastel Drawings.
797. " Oil Paintings.
799. Miss Minnie Wilson, Pastel Drawing.
1102 to 1104, inclusive. Charles Gerema, Oil Paintings.
1105 to 1109, inclusive. S. M. Brooks, Oil Paintlng.
1144. Charles Frederick, Oil Painting.
1145. J. L. Bardwell, Oil Painting.
1256. Miss Ida V. Doyle, Crayon Picture.
1157. " "

1158 to 1160, inclusive. J. A. Kerr, Water-color Sketches.
1171 and 1172. M. Lane, Oil Paintings.
1192. Emma McHenry, (14 years old) Oil Painting.
1197. and 1198, J. H. Jansen, Pencil Sketch.
1740. Pupils of the Public Schools of San Francisco and Oakland, Five hundred Crayon and Pencil Drawings.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The jurors to adjudge articles in Division VI, Class 23, submit their report, as follows:

The paintings on exhibition include originals and copies brought from Europe, being contributions made from private collections. The general instructions governing your Committee draw no distinction between such foreign paintings and those executed by resident artists. To consider such alien works of art in private hands as entering into the contest for awards seems so unjust and so obviously in opposition to the true spirit and object of these Industrial Exhibitions, that they have unanimously resolved to disregard them as standing in competition with the works of home artists. They, however, regard them as a distinct class in competition with each other.

Your Committee also agree that the works of California artists, which have passed by purchase into private collections, should not be regarded as competitors for the prizes. Of this latter class are paintings Nos. 802, 803 and 804, by Charles Nahl, the property of a citizen of Sacramento, which evince extraordinary finish and vivid coloring.

In this connection your Committee suggest that in future the Art Gallery should be made up of three distinct classes, viz:

Class No 1. Paintings, etc., by resident artists, painted for the Exhibition.

Class No. 2. Paintings, etc., by resident artists in private hands.

Class No. 3. Paintings, etc., of non-resident artists, in the hands of amateurs.

CALIFORNIA DEPARTMENT.

Your Committee recommend the bestowal of premiums as follows, viz:

S. M. Brooks, Still Life, Catalogue Nos. 1105 and 1106, Entry No. 547. Gold Medal. [Awarded a Gold Medal.]

To William L. Marple, Landscapes, Catalogue Nos. 935, 936, 937 and 938, Entry No. 352, a Silver Medal. [Awarded a Silver Medal.]

To. G. I. Denny, Marine Paintings, Catalogue Nos. 923 and 924, Entry No. 345, a Silver Medal. [Awarded a Silver Medal.]

To H. H. Moore, Paintings, Catalogue Nos. 67 and 68, Entry No. 37, a Diploma.

To E. Narjot, Paintings, Catalogue Nos. 364, 365, 366, 367 and 368, Entry No. 58, a Diploma.

To H. R. Bloomer, Paintings, Catalogue Nos. 1412 and 1413, Honorable Mention.

Mrs. W. Irelan, Plant Life, in Water colors, Catalogue Nos. 569 to 583, Entry No. 103. Honorable Mention. [Diploma Awarded.]

To Mrs. E. Blanche, Birds, Flowers and Landscapes, in the Kingstonian method, being the work of a lady aged 71 years, Catalogue No. 1327, 1328 and 1329, Entry No. 672, Honorable Mention.

To D. Tojetti, Catalogue Nos. 72, 73, 74, 75, 76, 77, 78 and 79, Entry No. 38. Heads and Cartoons. Honorable Mention.

FOREIGN DEPARTMENT.

Your Committee regard the following as the best Paintings in this Department in the order named, viz:

Catalogue No. 991, Entry No. 384. "Sale of the Spoils."
Catalogue No. 934, Entry No. 352. "Forest with Sheep."
Entry No. 993, Catalogue No. 384. "Return from Bal Masque."

The collection of J. L. Bardwell deserves a recommendation from the Committee of Final Awards as containing several noticeable paintings. [Awarded a Diploma.]

In the latter department your Committee limit themselves to a classification of the paintings according to merit, but they refer the grade of premiums to your Committee, suggesting, however, a Diploma as the maximum.

R. C. ROGERS.
CHARLES HOPPS.
EDWARD BOSQUI.
JAQUES J. RAY.

THE PUBLIC SCHOOLS.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—The Committee, to whom it was referred to decide upon the merits of the Drawings from the Public Schools of San Francisco and Oakland, beg leave to report:

They have great satisfaction in acknowledging that, amongst the drawings brought under their notice, some possess real merit, and that the efforts of

the scholars are highly commendable and reflect credit on their teachers. At the same time they can not but regret that the display of mechanical and architectural drawings was not better and more extensive. The short-coming in this respect seems to show that, while the importance of this branch of education is daily more and more widely felt, its cultivation is comparatively neglected in our public schools; and they would respectfully suggest that the Mechanics' Institute, as an influential body, petition the Board of Education with regard to the establishment of classes in mechanical and architectural drawing in our public schools, as an essential part and even the complement of our system of free education.

After a serious and conscientious examination of the drawings, your Committee would recommend the following awards:

SILVER MEDALS.

Fannie Hawley, Rincon School, Landscape Drawing.
Ella Whelan, Oakland High School, Marine Drawing.
Mary Rush, Denman Grammar School, Fruits and Flowers.
Morris Marcus, Lincoln School, Map Drawing.
Lillie Hardy, Oakland High School, Animal Drawing.
Emil Roturier, South Cosmopolitan School, Heads and Figures.
Eva St. John, Denman Grammar School, Flowers and Fruits.

BRONZE MEDALS.

J. K. Magagnos, Mechanical Drawing.
Nellie Caldwell, Denman Grammar School, Landscape Drawing.
Annie Shine, Oakland High School, Landscape Drawing.
Alice Hardy, Irving Grammar School, Oakland, Marine Drawing.
Ida Smith, Denman Grammar School, Marine Drawing.
Emma Divine, Denman Grammar School, Flowers and Fruits.
Ella Hopps, Denman Grammar School, Flowers and Fruits.
Lola Robinson, South Cosmopolitan School, Map Drawing.
Walter V. Mulvey, Washington Street School, Map Drawing.
Emma Buel, Oakland High School, Animal Drawing.
Ella Hopps, Denman Grammar School, Heads and Figures.
Helen Blakeslee, Oakland High School, Heads and Figures.
Lillie Hardy, Oakland High School, Heads and Figures.
Eva Edwards, Denman Grammar School, Flowers and Fruits.

DIPLOMAS.

John W. Holt, Architectural Drawing.
John C. Kloos, Architectural Drawing.
Emma Wielheimer, South Cosmopolitan School, Landscape Drawing.
Eliza Mury, South Cosmopolitan School, Landscape Drawing.
Isa V. Ellis, Broadway School, Landscape Drawing.
Gussie Michelson, Irving Grammar School, Oakland, Landscape Drawing.
Emma Rudolph, Oakland High School, Landscape Drawing.
Mary Selfridge, Irving Grammar School, Oakland, Landscape Drawing.
Maria Strange, Denman Grammar School, Landscape Drawing.
Luela Randolph, South San Francisco School, Landscape Drawing.
William M. Wade, South San Francisco School, Landscape Drawing.
Annie Shine, Oakland High School, Landscape Drawing.
Rosa Mathews, Oakland High School, Marine Drawing.
Eva Edwards, Denman Grammar School, Flowers and Fruits.
Emma Divine, Denman Grammar School, Flowers and Fruits.
Lucy Thompson, Denman Grammar School, Flowers and Fruits.
Belle Ford, Denman Grammar School, Flowers and Fruits.
Ida Killey, Denman Grammar School, Animal Drawing.
Hattie Cooper, Denman Grammar School, Animal Drawing.
Ira W. Emmons, Irving Grammar School, Oakland, Animal Drawing.
Charles Beintz, Irving Grammar School, Oakland, Animal Drawing.
Helen Blakeslee, Oakland High School, Heads and Figures.
Mary Clow, Oakland High School, Heads and Figures.

Hattie M. Tuttle, Shotwell Street School, Heads and Figures.
Angela Ghiradelli, Oakland High School, Heads and Figures.
Ada Smith, Denman Grammar School, Heads and Figures.
Mary Bratten, Denman Grammar School, Heads and Figures.
Ora Smith, Denman Grammar School, Heads and Figures.

In conclusion, your Committee would state that they have passed over a certain number of drawings in the various classes, the same having been executed three years ago, and there being good reason to believe that some of them had been entered at former exhibitions. A sentiment of justice and appreciation towards the Institute for its interest in behalf of the drawing classes of the public schools would also, as appears to your Committee, have dictated the exclusion of many of the drawings which have been admitted; the exhibition of works possessing such slender merit having no tendency to improve the public taste, and being positively detrimental alike to the interests of real art and to the nourishing of a wholesome and elevated love of excellence in the scholars.

All of which is respectfully submitted.

C. BRIER,
R. H. BLOOMER,
E. O. BELLE.

EVENING SCHOOL.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—Having been appointed by you to examine the drawings exhibited by the class in the Evening School, for Mechanical, Architectural and Ornamental Drawing, we beg leave to report as follows:

First, we desire to express our pleasure and appreciation of the generous manner in which the Trustees have rewarded the efforts of the pupils and the attention which they have personally bestowed, as well in time as in money, for the further advancement of the principles of the Mechanics' Institute; and while alluding to this, we wish to say a word for the patient and untiring labors of the teacher in the above school, whose work is one of exhaustion of brain and nerve, and who seems but ill requited for the services he is bestowing upon the coming generation of mechanics.

We have examined the drawings under the various heads mentioned above, and find a degree of proficiency which indicates an interest that has been taken in this important branch of mechanical and architectural education by pupils, and which needs and should have attention paid it, and encouragement given it, more than is apparent from the information we have received.

Too much pains can not be taken to correctly educate our young mechanics and architects in this particular branch, and we would suggest that the Trustees of the Mechanics' Institute select some person or persons from their members to devote some portion of their time in visiting the classes of the Evening School, and that premiums, from time to time, say semi-annually or annually, be given to excellence or proficiency. It would do much to encourage the ambition of the pupils and excite their ardor in their respective pursuits.

In order that their labors might be directed in proper channels and in a systematic way, we would suggest that some particular design should be given for competition, say, in Architecture—a house of small size for mechanics or laborers, which can be cheaply constructed, convenient and adapted to the general wants of those who desire habitations of comfort, and yet can scarcely afford the services of an architect.

These plans can then be printed and distributed generally, so that, with specifications added, the man of moderate means can have a comfortable and convenient dwelling for perhaps considerable less expense than when plans are made by architects for each particular house.

Mechanical Drawing could be for something in general use, say, for instance, an elevator for a store, with specifications, so that the machinery could be built from them.

It seems that if some such plan could be adopted, giving three or six months notice, it would induce many to attend for the purpose of competing for the annual or semi-annual prize.

In judging of the exhibits for competition in the Fair, we recommend the following awards:

Sweepstake Premium—To Wm. Byrne, for the best Drawing (Architectural.)

Silver Medal—To Frank Walker, for the second best Architectural Drawing; G. Constant Meese, for the best Mechanical Drawing.

Bronze Medals—To John W. Newcum, for third best Architectural Drawing; Henry Raschen, for Ornamental Drawing; J. A. Seckal, Pen Drawing of Saddle, and Panel Ornament (Fruit.)

Diplomas—To Robert Coulter, for Drawing of Turbine Water Wheel; Edward Kalben, Drawing of Composite Cap; J. Noble, Ornamental Drawing; Emil C. Fety, Drawing of a young Girl; Charles Wagner, Drawing of two enlarged Ornamental Vases.

The following Premiums were awarded to Apprentices:

A Silver Medal—To G. A. Bardwell, for Isometrical Architectural Drawing.

A Bronze Medal—To Jacob Grunnagle, for a Drawing of a Steam Fire Engine.

Diplomas—To E. H. Elmquist, Drawing of a Locomotive and Tender; J. W. Lunny, Glass Sign Work; Frederick Brown, Wax Work; August Golley, Miniature Working Steam Engine; Leo Morgan, small Oscillating Steam Engine.

All of which is respectfully submitted.

W. W. HANSCOM.
GEORGE W. DICKIE.
E. O. BELLE.

DIVISION VI.—CLASS 24.

SCULPTURE, CAMEO-CUTTING, STATUARY, ENGRAVED STONES, CARVING IN WOOD, Etc.

360. John Allen, specimens of Stone Seal Engraving.
1439. Misses Crane & Curtis, Wood Engraving.
877. Patrick Carroll, Photograph in marble frame.
891. D. Mencarini, sixteen pieces of Plaster Work.
232. P. Mezzara, Statue of California.
980. M. Heverin, Statuettes, Figures, Vases, Pedestals, etc.
981. " Alabaster Figures, Statuettes, etc.
982. " Polished Slabs of Italian Marble.
455 to 458, inclusive. Rev. T. C. Jameson, Bas-reliefs.
725. E. McGrath, Statuary Marble Mantel and Grate.
743. George W. Patch, Stencil Plates and Impressions.

764. G. O'Hara Taaffe, Group in Marble, thirteen pieces.
765. " " Group in Marble, twelve pieces.
766. " " Figure, Marble.
789. Albert Küner, specimens of Seal Engraving and Cameo Cutting.
790. R. A. Swain, two cases of Vases, Busts, Statuettes, etc.
1101. George M. Wood, Stencil Plates.
1152. F. M. Truworthy, Stencil Plates and Impressions.
196. S. H. Sheplar & Co., Patent Rubber Marking Wheel-Stamps, etc.
1669. G. A. Lloyd, Medal of 1853.
1505, 1636, 1637, 1640, 1641, 1623 to 1626, inclusive, and 1628, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine and adjudge articles exhibited in Division VI, Class 24, beg leave to submit the following report:

For specimens of Stone Seal Engraving by John Allen, Catalogue No. 360, Entry No. 53, we recommend that the Society's Diploma be awarded. [Diploma awarded.]

For specimens of Designing and Engraving on Wood by the Misses Crane & Curtis, Catalogue No. 1439, Entry No. 759, many of the specimens exhibiting delicate execution, we recommend that the Society's Diploma be awarded. [Silver Medal awarded.]

For Statue of California, P. Mezzara, Catalogue No. 232, Entry No. 247, Society's Diploma. [Awarded a Gold Medal.]

For the excellent pieces of Monumental Statuary and for the great variety of highly finished specimens of Marble, Catalogue Nos. 980, 981 and 982, Entry No. 376, M. Heverin, we recommend the award of a Silver Medal. [Diploma awarded.]

For the Marble Mantel and Grate, Catalogue No. 725, exhibited by E. McGrath, which is of elegant design and fine execution, we would recommend that the Society's Diploma be awarded. A special Silver Medal would not be above its deserts. [Awarded a Silver Medal.]

For finely executed specimens of Metal Seal Engraving, Catalogue No. 789, Entry No. 536, Albert Küner, we recommend the award of Society's Diploma. [Diploma awarded.]

Catalogue No. 455 to 458, Entry No. 439, Bas-reliefs exhibited by Rev. T. C. Jameson. Words are poor to express any idea of the refined features and delicate chiseling to be found in these Bas-reliefs by Madison Colby, and their exhibition should do much to educate the taste of those who examine them. We would, therefore, unless the medals are required for more utilitarian objects, recommend for them a Gold Medal. [Awarded Silver Medal.]

For fine specimens of Stencil Impressions, Catalogue No. 743, Entry No. 498, George W. Patch, we recommend the award of Society's Diploma. [Awarded Diploma.]

For number and variety of Stencil Impressions, Catalogue No. 1152, Entry No. 570, F. M. Truworthy, we recommend the award of Society's Diploma. [Awarded Diploma.]

For finest display of Statuettes, Vases, Busts, etc., Catalogue No. 790, Entry No. 537, R. A. Swain, we would recommend Society's Diploma. [Diploma awarded.]

All of which is respectfully submitted.

W. WALLACE SMITH,
WM. STEINEGGER,
B. R. NORTON.

DIVISION VI.—CLASS 25.

COLORING, STAINING AND EMBOSSING IN GLASS, RETOUCHED PHOTOGRAPHS, GOLD AND SILVER WARE, Etc.

1218. Job M. Seamans, case of Society Jewels and Jewelry.
299. Ansley G. Davis, Jewelry and Fancy Goods.
909. San Francisco Plating Works, case of Silver Plated Ware.
910. " " " case of old Goods Replated.
410. Peter A. Magnus, ladies Set of Filigree Work.
711. W. K. Vanderslice & Co., case of Silver Ware, California manufacture.
1112. Landsberger & Co., case of Premiums.
958. T. Rodgers Johnson, Odd Fellows' and Masons' Emblems.
1046. B. Pasquale, Odd Fellows' and Masons' Emblems and Regalias,
462 and 463. Norcross & Co., Masonic and Odd Fellows' Emblems, Embroideries, etc.
1793. Haynes & Lawton, two cases of Silver Plated Ware.
1897. Kimball & Co., specimen of Nickel Plating.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 25, Division VI, beg leave to submit the following report:

To Entry No. 476, Catalogue No. 711, one case of Solid Silver-ware, W. K. Vanderslice & Co., we recommend First Premium. [Gold Medal awarded.]

To Entry 940, Catalogue 1793, two cases of Plated Silver Ware, Haynes & Lawton, for the best display of this kind of goods, we recommend First Premium. [Silver Medal awarded.]

Entry No. 340, Catalogue No. 909. Edward G. Deniston. One case of Plated Ware, San Francisco Plating Works. Very good and of great variety; we recommend Second Premium.

Entry No. 340, Catalogue No. 910. One case of Old Goods plated. San Francisco Plating Works. Third Premium.

Entry No. 281, Catalogue No. 299. Zephi. A humbug; no such metal is known.

Entry No. 361, Catalogue No. 958. Masonic and I. O. O. F. Regalia and Jewels. T. Rodgers Johnson. Very fine display. Premium.

Entry No. 443, Catalogue No. 462. I. O. O. F. and Masonic Regalia and Jewels. Norcross & Co. Display very fine. Premium.

Entry No. 611, Catalogue No. 1046. Regalia, Rosettes and Flags. B. Pasquale. An attractive display.

Catalogue Nos. 1049–1512. Lacquered Goods. Japanese. Choice selection.

Catalogue Nos. 1550, 1551, 1554, 1556, 1596 and 1635. This lot of Japanese Toys and Ornaments are of no interest in this country.

All of which is respectfully submitted.

B. R. NORTON.
JOB M. SEAMANS.

We desire to make a special report upon Entry No. 181, Catalogue No. 1218, Case of Society Jewels, Gold and Silver; home manufacture. Job M. Seamans. We consider them entitled to rank in the first class. [Awarded a Diploma.]

ROBERT MILLS.
B. R. NORTON.

DIVISION VI.—CLASS 26.

LITHOGRAPHY, ENGRAVING ON COPPER, STEEL, WOOD, STONE, PHOTOGRAPHY, Etc.

23. R. & F. Tooth & Co., Illuminated Show Cards.
49. W. C. Butler, specimens of Engraving on Wood—Newspaper and Magazine Headings.
50. W. C. Butler, specimens of Engraving on Wood—Machinery and Buildings.
51. W. C. Butler, specimens of Engraving on Wood—Landscapes.
301 to 348, inclusive. Edouart & Cobb, Plain, Colored and Retouched Photographs.
809. Currier & Winter, Photograph from Bas-relief.
810. " " "
815. Bradley & Rulofson, twenty-nine Imperial Photographs.
816. " two 8-4 Photographic Portraits.
817. " five frames Cabinet Photographs.
845 to 852, inclusive. Emily R. Eastman, Colored and Retouched Photographs.
887. Oscar Kallschmidt, Colored Photograph.
888. " three Colored Photographs.
889. " Photograph in India Ink.
1375 to 1410, inclusive. N. M. Klain, Photographs of Monuments and Buildings.
212. J. L. Bardwell, Engraving.
234. Edouart & Cobb, Photographs.
235. " "
1023 to 1034, inclusive. Charles Gentile, Photographs from Arizona.
1035 to 1039, inclusive. Charles Gentile, Photographs of Arizona scenery.
1488. Thomas Houseworth, Photographs.
786. G. W. Shourds, samples of Wood Engraving
1146. Emily R. Eastman, two Water-color Photographs.
1149. I. W. Taber, Photographs.
1653 to 1660, inclusive. G. D. Morse, Photographs.
1663 to 1665, inclusive. C. E. Watkins, Photographs.
1781. Miss Maggie M. Henderson, frame of Colored Photographs.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee appointed to examine and adjudge articles exhibited in Class 26, of Division VI, beg leave to submit the following report :

Catalogue No. 49, 50 and 51, Entry No. 31. Specimens of Engraving on Wood, Newspaper Headings; specimens of engraving on Wood, Machinery and

Buildings; specimens of engraving on Wood; Landscape, etc. Honorable Mention.

Catalogue Nos. 301 to 348, Entry No. 40. Edouart & Cobb. General Work in Photography. Honorable Mention. [Awarded a Diploma.]

Catalogue Nos. 815, 816 and 817, Entry No. 123. Bradley & Rulofson. Best Large Plain Photographs. Society's Diploma. [Awarded a Diploma for Nos. 815 and 816.]

Catalogue Nos. 1375 to 1410. N. M. Klain. Photographs of Monuments and Buildings. Society's Diploma. [Awarded a Diploma.]

Catalogue No. 211, Entry No. 242. J. L. Bardwell. Best Engraving on Stone. Honorable Mention.

Catalogue Nos. 1023 to 1034, and 1035 to 1039, Entry Nos. 602 and 604. Charles Gentile. Photographs from Arizona. Honorable Mention. [Awarded a Diploma.]

Catalogue No. 1488, Entry No. 789. Thomas Houseworth. Photographic Views. Society's Diploma. [Awarded a Diploma.]

Catalogue No. 786, Entry No. 533. G. W. Shourds. Best Engraving on Wood. Society's Diploma.

Catalogue No. 1149, Entry No. 567. I. W. Taber. Large Plain Photograph. Society's Diploma.

Catalogue No. 1653 to 1660, Entry No. 839. George D. Morse. Best Colored Photographs. Silver Medal. [Awarded a Silver Medal.]

Catalogue Nos. 1603 to 1605, Entry No. 842. C. E. Watkins. Best Photographic Views. First Gold Medal. [Awarded a Silver Medal.]

Catalogue No. 1781, Entry No. 902. Miss Maggie M. Henderson. Colored Photographs. Honorable Mention. [Awarded a Diploma.]

All of which is respectfully submitted.

A. A. HICKOX.
JOSEPH BRITTON.
WM. WINTER.

DIVISION VI.—CLASS 27.

WAX WORK, HAIR WORK, AND RUBBER JEWELRY, Etc.

17. Mrs. Mary S. Grant, Wax Cross with Vine, Imitation of Marble.
18. Mrs. Mary S. Grant, Wax Cross with Roses, Imitation of Marble
62. Mrs. R. Thomson, Cross made from perforated paper.
82. Madame Jacquinot, specimens of Hair Work.
83. Madame Jacquinot, Hair Wreath.
86. Mrs. J. D. Galloway, Agricultural Wreath.
376. Mrs. Schmitt, Frame Hair Work, Urn.
377. Mrs. Schmitt, Frame Hair Work, Bouquet.
378. Mrs. Schmitt, Frame Hair Work, Monument.
379. Mrs. Schmitt, Frame Hair Work, Curl.
380. Mrs. Schmitt, Frame of Hair Work, Name.
381. Mrs. M. D. Carpenter, specimens preserved Funeral Flowers, form of a Cross.
382. Mrs. M. D. Carpenter, specimens preserved Funeral Flowers, form of an Anchor.
387. Mrs. A. G. Turner, Box of Wax Cigars.
388. Mrs. J. G. Turner, Case of Wax Oysters.

389. Mrs. J. G. Turner, Case of Autumn Leaves.
390. Mrs. J. G. Turner, Case of Wax Confectionery, Cakes, etc.
394. Miss Armstrong, Wax Cross in Case.
397. Master Fred Brown, Wax Flowers and Autumn Leaves in Case.
504. Mrs. A. J. Bosworth, Shell Bouquet.
507. Miss Addie E. Whitney, Wreath Flowers, White Paper.
508. Miss Addie E. Whitney, Group of Flowers, White Paper.
520. Sallie Estelle Fox, Hair Cross and Flowers.
589. M. E. Buckley, Fancy Glove Boxes.
598. Miss Hughes, Pot of Violets, in Wax.
597. " Easter Morn Cross, in Wax.
596. " Pond Lillies, in Wax.
595. " Hand and Bouquet, in Wax.
594. " Case of Wax Flowers.
599. " Basket of Autumn Leaves in Wax.
827. Mrs. A. O. Cook, Greek Slave, in Wax.
828. " Case of Wax Flowers.
829. " Case of Shells.
830. " Variety of Wax Work.
836. Madame Jacquinot, Bouquet of Hair Work.
839. Mrs. Cotter, Wax Cross.
840. " Wax Autumn Leaves.
841. " Wax Pond Lilies.
842. " Wax Bouquet.
843. " Decalcomanie Work-box.
844. " Decalcomanie Pin-cushion.
855. " Decalcomanie Vases.
856. " Decalcomanie Bottle and Cup.
873. Mrs. Valery D'Echatrette, seven samples of Moss-work.
874. " " Shell-work.
884. Miss Armstrong, Fruit-piece in Wax.
835. " " Bouquet.
1204. Madame Anna Getz, Easter Morn Cross, in Wax.
1205. " " Autumn Leaves, in Wax.
1206. " " Vase of Autumn Leaves, in Wax.
1207. " " Vase of Pond Lilies, in Wax.
1208. " " Vase of Flowers, in Wax.
1212. " " Cross of Preserved Flowers.
1213. " " Autumn Leaves and Berries, in Wax.
1215. Mrs. S. G. Folger, Wreath in Wool.
1219. Mrs. Abby M. Peck, Wreath in Wool.
1221. Mrs. C. L. Houghton, Wreath in Worsted.
1222. L. Kohn, two Transparent Pictures.
1224. Mrs. J. H. Moody, Hair Wreath.
1225. Mrs. Winser, Wax Cross.
1230. Mrs. G. W. Blasdell, Mexican Aquatic Flowers.
1248. Nettie French (age 13 years), Bouquet in Wax.
1251. Rachel Davidson, Wreath in Wool.
1252. Thekla Regensberger, Bouquet in Wax.
1253. Mrs. C. M. Chapman, case of Hair Work and Jewelry.
1254. " " " case of Imitation Hair Work.
1262. Mrs. George Spaulding, Oval Frame Paper Flowers.
1366. Mrs. M. E. Doherty, case of Curls, Chignons, etc.
1368. " " " Bouquet Stand.
1373. Madame Anna Getz, Natural Autumn Leaves.
1374. " " " Madonna and Saviour, in Wax.
131. Mrs. Emma Church, Natural Flowers Pressed.
165. Miss Carrie Thompson, Perforated Paper Cross.
171. Mrs. D. McK. Bokee, Frames of Wax Flowers.
172. " " " Oval glass Water Lilies, in Wax.

613. Madam Anna Getz, case of Wax Flowers.
616. Miss Gussie Franklin, String of Buttons.
620. Mrs. J. J. Gardner, Sea Moss Picture, oil background.
621. " " "

918. Madame Anna Getz, Basket of Wax Flowers.
919. " " " Cross in Wax.
920. " " " Preserved Natural Flowers.
921. " " " Pond Lilies.

1346. Miss Fanny E. Gray, Wax Autumn Leaves.
1347. " " " Moss and Shell Work.

443. Henry White, Scrap Book, etc.
475. Mrs. Schmitt, Hair Work.
478. J. T. Jennings, Snuff-box 695 years old.
500. Mrs. R. I. Robinson, specimen of Autumn Leaves, from the White Mountains.

709. Henrietta Brustgrum, Feather Flowers.
727. H. Kahn, specimens of Artificial Flowers.
728. Loretto Montez, casket of Shell Flowers.
730. Miss Sarah Craig, Artificial Flowers.
750. Madame Anna Getz, Pond Lilies, in Wax.

754. Mrs. A. D. Baker, fancy Leather-work Frames and Bracket.
753. " " fancy Leather-work Mirror-frame.

774. Miss Hattie Whiting, Pin-cushion Head Flowers.
775. " " Worsted Basket.

783. Mrs. A. O. Cook, Wax Picture.

784. Mrs. D. McK. Bokee, Wax Flowers.
785. " " " Wax Shade.

791. Mrs. Calvin E. Woodbury, Ivory Fan, 64 years old.
795. Mrs. A. E. Wilson, Bouquet of Wax Flowers.
798. Miss Minnie Wilson, Bouquet of Wax Flowers.
1150. Miss Emma Newbauer, Fancy Wool Basket.
1164. Mrs. M. E. Gerrish, basket of Wax Flowers.

1162. Mrs. Meanny, two Headed Pincushions.
1163. " " two Paper Receivers.

1168. Mrs. G. W. Blasdell, Moss Wreath.
1169. Mrs. J. Gerema, Beaded Sofa Cushion.
900. Miss Armstrong, Wreath of Wax Leaves.
1784. Mrs. C. Cook, Bouquet of Hair-work.
1574, 1582, 1583, 1584, 1585, 1607 to 1617, inclusive. Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to examine and adjudge articles exhibited in Class 27, Division VI, respectfully recommend the following awards of premiums:

Madame Anna Getz, best display of Wax-work. Silver Medal. [Diploma awarded.]

Mrs. A. O. Cook, second best display of Wax-work. Diploma. [Diploma awarded.]

Mrs. M. J. G. Turner. Diploma. [Diploma awarded.]
Mrs. M. E. Gerrish. Diploma. [Diploma awarded.]
Nellie A. French. Honorable Mention.
T. Regensberger. Honorable mention.
Fred Brown. Diploma.
Miss Amy Hughes. Diploma. [Diploma awarded.]

Mrs. Schmitt, best display of Hairwork in frames. Diploma. [Diploma awarded.]

Mrs. C. Cook, Hair Jewelry. Diploma.
Miss J. Gardner, best display of Moss-work. Diploma. [Diploma awarded.]
Mrs. L. C. Folger, specimens of Wool-work. Honorable Mention.
Abbie M. Peck, specimens of Wool-work. Honorable Mention.
Mrs. C. L. Houghton, specimens of Wool-work. Honorable Mention.
Mrs. M. E. Doherty, specimens of Curls, Chignons, etc. Diploma. [Diploma awarded.]

Mrs. A. D. Baker, specimens of Leather-work. Diploma. [Diploma awarded.]

Catalogue No. 1574 (Japanese). U. S. Coat of Arms. Diploma.
Mrs. Cotter, Decalcomanie. Diploma. [Diploma awarded.]
Madame Anna Getz, Preserved Flowers. Diploma.
Mrs. A. J. Bosworth, Shell-work. Diploma. [Diploma awarded.]
Henry White, Scrap-book. Diploma. [Diploma awarded.]
H. Kahn, Artificial Flowers. Diploma. [Diploma awarded.]
Dr. Macgowan, Carvings. Diploma.
Mrs. R. I. Robinson, Natural Leaves. Diploma.

All of which is respectfully submitted.

MRS. EZRA D. CARR.
J. W. SHAEFFER.
JOHN HANNA.

DIVISION VII.

THE LIBERAL ARTS.

The display in this department, including an infinite variety of articles combining the useful and the ornamental, was extensive and interesting. It would be alike difficult to enumerate the great variety displayed or to point out the excellence of many of the articles exhibited. The numerous samples of various styles of printing exhibited the advanced stage of the typographical art in this portion of the world, and the specimens of ornamental painting, lettering, graining, imitation of marbles, and a great variety of foreign as well as native woods, were admirably done, and their evidences of real merit fully appreciated and acknowledged.

As the department of Musical Instruments comes under this head, it is a source of pride to Californians that, after an impartial and thorough test of the merits, by competent judges of the instruments exhibited, the first premium was awarded to a Piano of California manufacture. The excellence of tone and the superiority of the workmanship, combined with the beauty of the native woods employed in the ornamental portions of the instrument, united in legitimately bearing away the palm.

DIVISION VII.—CLASS 28.

SPECIMENS OF PRINTING, PUBLISHING, TYPOGRAPHY, NEW BOOKS, Etc.

384. W. H. Jessup, specimens of Wilder's Slated Paper, for School-rooms.
521, to 532, inclusive. Heald's Business College, specimens of Penmanship and Pen-drawing.
534. W. Bainbridge Turner, Pen Map-drawing.
600. Cubery & Co., specimens of Card Printing.
822. " " two frames containing specimens of Printing.
823. " " two frames containing specimens of Ornamental Printing.
1247. Pacific Business College, five frames of specimens of Penmanship.
1287. Richard Dreise, specimens of Penmanship.
117. Miss Hattie Phipps, Lord's Prayer executed with a Pen.
237. Eddy Figel, Confederate Currency.
755. Dr. J. Flattery, Ulster County (N. Y.) *Gazette* of Jan. 4, 1800.
757. L. P. Fisher, Ulster County (N. Y.) *Gazette* of Jan. 4, 1800.
767. Cubery & Co., specimen of Printing by George Sherman, an apprentice.
768. Cubery & Co., specimen of Book Printing.
769. Waters, Newhoff & Co., specimens of Printing.
449. S. Hirschfelder, specimens of Card-writing.
460. J. P. Dwyer, specimens of Card-writing.
487. Teresa A. Hanlon, specimens of Writing.
1735. C. Beach, Monograms.
1736. C. Beach, Visiting Cards.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee, appointed to examine and adjudge articles exhibited in Division VII, Class 28, beg to submit the following report :

Entry No. 705, Catalogue No. 1247. Second Premium to F. Seregni, for artistic excellence and superiority in the design and execution of Commercial and Ornamental Penmanship. [Awarded a Diploma.]

Catalogue No. 521 to 532, Entry No. 85. Third Premium to Heald's Business College, for praiseworthy exhibit of specimens of Commercial Penmanship.

Catalogue No. 384, Entry No. 54. W. H. Jessup, Wilder's Slated Paper; an article for which we recommend a Diploma.

Catalogue Nos. 600, 822 and 823, Entry Nos. 112 and 127. Third Premium to Cubery & Co., for excellence in Plain and Ornamental Printing. [Awarded a Diploma.]

Catalogue No. 769, Entry No. 520. Fourth Premium to Waters, Newhoff & Co., for creditable display of Printing. [Awarded a Diploma.]

All of which is respectfully submitted.

ALFRED WM. STOTT.
EDGAR BRIGGS.
S. P. TAYLOR.

DIVISION VII.—CLASS 29.

BOOK-BINDING AND STATIONERY, PAPER-RULING, Etc.

139. J. J. Knowlton & Co., specimens of Ink.
140. " " " specimens of Mucilage.
664. Joseph Dixon Crucible Company, Jersey City, N. J., Lumber Pencils.
467. John G. Hodge & Co., samples of Blank-books and Fancy Articles.
468. John G. Hodge & Co., samples of Copying Presses.
469. " " " samples of Writing Paper.
729. " " " samples of Lead Pencils.
1737. C. Beach, samples of Stationery.
1502, 1503 and 1550. Japanese.

To the President and the Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

Your Committee, appointed to inspect the articles on exhibition included in Division VII, Class 29, having attended to the duties assigned them, beg leave to report as follows:

But few exhibits were made of articles that were designated for this class, and in no case was there any direct competition.

Entry No. 226, Catalogue Nos. 139 and 140. J. J. Knowlton exhibits boxes and bottles of various kinds of California-made Inks and Mucilage, for which we recommend a Diploma. [Awarded a Diploma.]

Entry No. 311, Catalogue No. 664. John Taylor & Co. exhibits specimens of Dixon's Lumber Pencil, a new article, deserving Honorable Mention.

Entry Nos. 445 and 489, Catalogue Nos. 467, 468, 469 and 729. John G. Hodge & Co. exhibits a fine assortment of Blank Books, Carew's Writing Papers, Copying Presses and Faber's Lead Pencils, for which we recommend that they receive a Diploma.

Entry No. 856, Catalogue No. 1737. Chilion Beach exhibits fine samples of Initial Note Paper and Fancy Stationery, for which we think a Diploma should be awarded.

The Japanese Goods coming under our observation comprise a variety of Japanese Lanterns, Umbrellas, Cigar Cases, Trays, Lacquered Wares Porcelain Wares, and Vases; truly a fine exhibit, and something entirely new as compared with former exhibitions, for which we recommend that the exhibitors receive a Diploma.

All of which is respectfully submitted.

JAMES L. FIELDS.
A. T. DEWEY.
JAS. MOFFITT.

DIVISION VII.—CLASS 30.

SIGN PAINTING, SCENIC PAINTING, STAINING, POLISHING, MARBLING, Etc.

45. Wm. McDowell, Framed Show Card.
46. Wm. McDowell, three unframed Show Cards.
362. George F. Fuller, samples of Crystal and Silvered Door Plates.
393. Henry Burner, Ornamental Glass Sign.
505. J. W. Fowler, eight Gilt Signs on Glass.
506. J. W. Fowler, Fruit Piece on Glass in Gold.
135. A. Adler, Fancy Painted Sign.
788. James W. Lunny (aged 15 years,) Gold Lettering on Glass.
1155. Louis Tomsky, specimens of Sign Painting, on Wood and Glass.
1183 to 1189, inclusive. Geo. A. Brush, specimens of Graining.
1757. Charles E. Broad, specimens of Graining in Oak, Laurel, Walnut and Maple.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The undersigned Committee appointed to examine and report upon the articles on exhibition in Class No. 30, Division VII, have attended to that duty, and make the following recommendations:

1. That a Silver Medal be awarded to George A. Brush, as the First Premium, for very superior imitations of Laurel, Rosewood, Redwood root, Oak and Walnut Woods. Entry No. 390, Catalogue Nos. 1183 to 1189. [Awarded a Diploma.]
2. That a Certificate of Merit be given to Charles E. Broad, for Imitations of Oak, Walnut, Laurel and Maple Woods. Entry No. 876, Catalogue No. 1757.
3. That a Certificate of Merit be given to J. Ross for imitations of Woods and Marbles exhibited. Entry No. 157.
4. That a Diploma be awarded to Henry Burner, as the First Premium in Sign Painting, for an Ornamental Glass Sign. Entry No. 69, Catalogue No. 393. [Awarded a Diploma.]
5. That a Certificate of Merit be given to James W. Lunny, aged fifteen years, for a creditable specimen of Gold Lettering on Glass, which gives promise of future excellence. Entry No. 535, Catalogue No. 788.
6. That a Diploma be given to Fuller & Co. for an improvement in the silvering of Glass Door Plates, making them very beautiful, and it is claimed indestructible. Entry No. 56, Catalogue No. 362. [Diploma awarded to Geo. F. Fuller.]

L. Tomsky & Son exhibit two Signs of Glass and Wood, respectively. The gilding of the Glass Sign is good, and the letters are well formed, but the composition or laying out is bad and the colors inharmonious. The letters on the wooden sign are also well made and shaded, but the style of the letters is unsuited to the board, which is too narrow to show them to advantage. The want of *proportion* in the sign is a fatal defect.

All of which is respectfully submitted.

C. A. BERNARD.
JOHN W. CHERRY
W. L. MARPLE.

DIVISION VII.—CLASS 31.

675. S. G. Dennis, Parlor Grand Organ.
941 to 948, inclusive. Kohler, Chase & Co., Musical Instruments.
1064 to 1066, inclusive. A. H. Havell, Musical Instruments.
1069. B. Curtaz, an Arion Piano.
450. A. A. Rosenberg, two Emerson Pianos.
479. Jacob Zech, Grand Piano.
480. " Square Piano.
721. C. S. Eaton, two Hazelton Pianos.
722. " an Estey & Co. Parlor Organ.
732. W. G. Badger, two Hallett, Davis & Co. Pianos.
735. Sherman & Hyde, a Weber Grand Piano.
733. " a Weber Square Piano.
734. " two Smith's Organs.
1111. W. G. Badger, a Hallett, Davis & Co. Piano.
1457. C. S. Eaton, an Estey Cabinet Organ.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee, appointed to examine and adjudge articles on exhibition in Division VII, Class 31, respectfully report:

Grand Pianos.—Your Committee found great difficulty in deciding between Catalogue No. 479, Entry No. 452, by Jacob Zech, of this city, and Catalogue No. 735, Entry No. 492, by Weber, of New York; but, after due consideration, we must give a slight preference to the Weber Piano, and at the same time say that both instruments are of a quality and tone that can hardly be excelled by any manufacturer, and therefore your Committee recommend that equal premiums be given to each of the above named instruments.

Square Pianos.—The display of this Division is considerably below the standard of former exhibitions, exhibitors having taken very little care to present the best instruments in their possession. Your Committee, however, would recommend that the First Premium be awarded to Catalogue No. 480, Entry No. 452, by Jacob Zech, of this city, and the Second Premium to Catalogue No. 1111, Entry No. 549, Hallett, Davis & Co.'s Piano, exhibited by W. G. Badger. [Award of Gold Medal to Jacob Zech and Silver Medal to William G. Badger.]

Upright Pianos.—Of these your Committee find nothing worthy of note.

Reed Organs or Melodeons.—In this department your Committee find much to admire in the degree of perfection attained, and the close imitation of Pipe Organ effects. In the Mason & Hamlin we find the great excellence in the automatic swell and the purity and beauty of tone of solo stops. In the Estey Organ we find fine orchestral effects produced in the combined or full Organ—the best of substitutes for the Pipe Organ. Your Committee would therefore recommend the following awards:

First Premium to Catalogue No. 945, Entry No. 355. Mason & Hamlin's manufacture, exhibited by Kohler, Chase & Co. [Awarded a Diploma.]

Second Premium to Catalogue No. 1457, Entry No. 690. Estey's Cabinet Organ, exhibited by C. S. Eaton. [Awarded a Diploma.]

Third Premium to Catalogue No. 734, Entry No. 492. Smith's Organs, exhibited by Sherman & Hyde. [Awarded a Diploma.]

All of which is respectfully submitted.

JOHN H. TITCOMB,
LEONARD S. CLARK,
HENRY O. HUNT,
HENRY N. CHAUNCEY,
JOHN McCRAITH.

DIVISION VII.—CLASS 32.

MILLINERY, DRESS MAKING, CLOAK MAKING, SEWING MACHINE WORK, Etc.

2. Miss Elizabeth Minturn, Basket of Worsted Flowers.
10. George. G. Macy, six Rag Mats.
13. Mrs. H. C. Cedarbloom, one Rag Rug.
25. Miss Winnifred Gibbons, Parlor Screen embroidered in Chenille and Gold.
28. Mrs. S. H. Mather, Quilted Needle Work. Skirt made at Convent in France, A. D. 1764.
29. Mrs. R. A. Goodrum, Basket of Worsted Flowers.
30. Mrs. R. A. Goodrum, Basket or Wreath of Moss.
31. Miss D. Hope, Frame of Natural Pressed Flowers.
32. Edward Vanderleith, miniature Esquimaux Canoe.
63. Mrs. John Donohue, Silk Quilt.
357. Mrs. E. Bartlett, Bed Quilt, 650 pieces.
358. Mrs. E. Bartlett, section of Bed Quilt, 340 pieces.
359. Mrs. E. Bartlett, eight pair of Knitted Socks.
361. Mrs. Anna Van Deursen, Down Cape, Collar, and Trimmings.
369. Mrs. A. S. Martinache, Frame of Silk and Worsted Embroidery.
375. Mrs. Chamberlain, Silk Quilt, Log Cabin style.
503. Mrs. Bertha Dieren, Tapestry Embroidered Rug.
513. Miss Mary Jane Graham, Tapestry picture of "St. Patrick."
517. Mrs. Anna Cordes, Pillow cases trimmed with Linen Lace.
518. Mrs. Anna Cordes, Crochet Tidies.
519. Mrs. Anna Cordes, Tulip Patchwork.
533. Eliza Schumaker, Dressed Doll.
560. Miss Jennie Wackenheimer, String of Fancy Buttons.
584. Mrs. Robert J. Preston, Worsted Picture, "The Gay Young Cavalier."
585. Mrs. S. F. Paullin, Theatrical and Masquerade Costume.
586. Mrs. S. F. Paullin, two Quilts.
588. M. H. Chambers, Fancy Sofa Pillow.
593. Women's Co-operative Union, Plain and Fancy Needle-Work.
801. Mrs. H. A. Williams, Embroidery, "Sutter's Fort."
805. Madame Brossa, system of Dress Cutting and Patterns.
806. Mrs. L. Kertin, Silk Quilt.
808. Miss S. A. Nichols, Tatting Handkerchief and Collar.
821. Miss Deck, Tapestry picture, "Easter Morning."
875. Mrs. Vallery Dechatrette, Specimens of Fancy Needle-work.
877. Miss Alice Reynolds, String of Buttons.
892. Katie Kommer, (8 years of age) one Shirt.
893. Mrs. Eliza Hartman, Knitted Quilt.

894. Mrs. J. Truebody, Silk Bed spread.
1255. Jane S. Bowen, Worsted Mat.
1257. Mrs. E. C. Hurlburt, Tatting.
1280. Mrs. M. S. Bowdish, Tatting Collar.
1299. Mrs. S. F. Paullin, Rag Carpet.
1372. Madame Anna Getz, French Embroidery.
102. Mrs. Charles F. Webster, Fancy Rag Rug.
103. Mrs. C. O. Favor, fancy Embroidered Night Dress.
104. " " " Chemise.
114. A. J. Anderson, Patch-work Quilt.
122. Miss Eugenia Jones, Zephyr Worsted Rug.
128. Mrs. Mary E. Coolidge, Silk Quilt.
159. Miss Abbie Coolidge, Silk Embroidered Quilt.
133. Miss E. Pritz, Zephyr Worsted Rug.
134. " Sofa Cushion.
136. Mrs. Phoebe Paul, Sofa Cushion.
137. " Silk Quilt.
142. Mrs. George V. Goodnow, Anti-Macassars.
290. Pacific Neck-tie Factory, samples of Neck-ties, Scarfs, etc.
1602. Mrs. G. W. M. Cowles, samples of Millinery, Lace, Fancy Goods, etc.
617. Eliza M. Dryden, Parlor Mats.
638. M. Freud, samples of Hoop-skirts, Corsets, etc.
639. " Patent Shoulder-brace Corsets.
917. Mrs. E. H. Watson, Knitted Quilt, Tidy and Infant's Sacque.
957. T. Rodgers Johnson, assortment of Regalia Trimmings.
961. " Embroidery, Gold Lace, etc.
1010. Pacific Straw Works, Hats, Bonnets, Straw Goods, etc.
1046. B. Pasquale, Masonic and Odd Fellows' Regalias, Emblems, etc.
1048. Mrs. James Sullivan, Embroideries and Stamped Goods.
1326. Mrs. A. R. Hynes, Silk Quilt.
1345. Miss Fannie E. Gray, Worsted Picture, "Goddess of Liberty."
1464. Locan & Co., Fancy Articles, Embroideries, etc.
435. Miss Emma J. Cryer, Tapestry Picture, "General Washington."
465. Norcross & Co., Embroideries, etc.
704. Mrs. M. A. Barton, Millinery Goods, etc.
487. Mrs. E. S. Roberts, system of Dress Cutting.
700. Mrs. A. Butler, Knitted Quilt.
703. C. H. Burr, Shoulder Braces.
710. Miss E. Whipple, Afghan.
714. O. B. C. Burnett (Yuba County), Quilt, Worsted Patchwork.
719. John H. Mooney, Tuck Markers.
720. S. Rosenblatt, Laces, Shawls, Silk and Velvet Suits, Fancy Goods, etc.
731. Miss Fredrika Dirrias, Hand-worked Lace.
736. Sophie Landsberger, String of Buttons.
741. Mrs. J. C. Reis, two Afghans.
745. Miss E. C. Walker, Worked Baby-suit.
756. Miss Julia Thomas, Needle-work Picture.
776. Miss Addie Hyatt, Silk Patch-work Quilt.
1121. Miss P. V. Gabbs, Chenille Picture.
1123. Mrs. Adele Martinache, Infant's Robe and Shirt.
1148. Charles H. Denison, Afghan.
1154. Mrs. E. Barringer, Model Dress Cutting, etc.
1167. Mrs. J. T. Fowler, Needle-worked Quilt.
1174. Amelia Schaefer, String of Buttons.
1175. H. Friedlander & Co., case of Ladies' Underwear.
1176. Keane, O'Connor & Co., Velvets, Silks, Laces, etc.
1181. Miss E. C. Walker, Quilt, Log Cabin style.
1202. D. Samuels, sample of Laces.
1203. " Embroidered Handkerchief.
1713. J. W. Davidson & Co., Silk and Satin Dress Suit, Sacque, etc.

147. Mrs. Jane Guthrie, Fancy Rag Rug.
911. Thurnauer & Zinn, assortment of Toys and Fancy Goods.
448. Mrs. George Middlemas, Rag Mat.
744. Mrs. M. L. Morgan, Crape and Tarletan Collars and Cuffs.
960. T. Rodgers Johnson, Naval Belts, Hats, Buttons, etc.
464. Norcross & Co., Army and Navy Goods.
1179. Albert H. Law, Ladies' Thimbles.
1209. Mrs. A. H. Makins. samples of Neck-ties, Scarfs. Bows, etc.
950. Mrs. Eveline Morris, assortment of Gents' Furnishing Goods.
1547, 1552, 1553 and 1555, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN — Your Committee of ladies appointed to examine Embroideries, Millinery, Fancy Needlework, etc., exhibited in Class 32, Division VII, after having thoroughly inspected each and every article, and conferred together, beg leave to submit the following report:

Millinery. To Mrs. C. W. M. Cowles, for a fine display of Bonnets and Hats, all of her own manufacture, evincing good taste and pleasing effect, we award a Diploma. [Awarded a Diploma.]

To Women's Co-operative Union, for best general display of Ladies' and Childrens' fine Linen, etc., consisting of Silk Embroidery, exquisite Handsewing, also beautiful Machine Sewing, *each* department of which we consider well worthy a special premium, and would award a Silver Medal. [Awarded a Silver Medal.

Mrs. Curtis' Improved Method of Cutting Ladies' and Childrens' Clothes, exhibited by Mrs. Barringer. We have practically examined this model, designed by the late Mrs. Margaret Curtis, and find it perfect in cutting all that is claimed for it, from a plain waist to the most elaborate trimmed skirt. It is invaluable to those who have thoroughly learned to cut by it, and as it was designed by a worthy woman of San Francisco, the Committee claim a Special Diploma. [Diploma awarded to Mrs. Elizabeth Barringer.]

SHIRTS.—Women's Co-operative Union. The Committee also find in this institution the best made and finest finished shirts for gentlemen, which are well worthy their special attention. They can also have shirts neatly mended and repaired at this establishment. [Awarded a Special Premium.]

A very pretty shirt, all made by hand, by Miss Katie Kommer, 8 years of age. Award, a Diploma. [Awarded a Diploma.]

Mrs. E. Morris, for a very fine display of Gentlemen's Furnishing Goods, Flannel of fine quality, all of her own cut and finish, we consider worthy of a Diploma. [Awarded a Diploma.]

The White House—Davidson & Co. This ever popular firm make one of the finest exhibitions of the Fair, as their dresses of Satin, Silk, Velvet, etc., also Silk Basques, Silk Sacques, etc., all exquisite styles of their own, and made up and trimmed with such perfect taste, with the finest qualities of Lace, and Furs—one Chantilly Dress alone being worth $1,000—and of such beautiful patterns, the eye never wearies of looking at them. We are sure they can have no competition in this city as far as value of goods and perfect taste are combined. We regret that their case was not large enough to permit them to exhibit all of their lovely dresses at one time—as they were each made for exhibition. Every article exhibited by them was made at their establishment. We award a Special Mention.

Down Capes, Collars, and Trimmings. This exquisite piece of work was all done by an old lady 78 years of age, Mrs. A. Van Deursen, and we consider it well worthy a Diploma. [Awarded a Diploma.]

Tapestry Picture, "Gen. Washington," by Miss E. J. Cryer, a young lady 14 years of age. The Committee find this an extraordinary piece of work for one so young, showing great taste in the blending of colors, and, taken altogether, is a perfect study. We would award a Diploma. [Awarded a Diploma.]

Tapestry Picture, "St. Patrick," by Miss M. J. Graham, an elegant piece of work, for which we award a Diploma. [Awarded a Diploma.]

Embroidery, "Sutter's Fort." We consider this work, exhibited by Mrs. H. A. Williams, Historical, and would award a Special Diploma. [Awarded a Diploma.]

Tapestry Picture, "Easter Morning," by Miss Deck. Diploma.

D. Norcross & Co. exhibit the finest display of Regalia, Odd Fellows', and other orders—beautifully wrought robes which are readily recognized by members of those Orders, with appropriate caps. Also, beautiful cloaks for Knights Templars, and Regalia for ladies belonging to those Orders. All these goods are manufactured and embroidered by themselves, and the Committee consider them worthy a Special Premium. [Awarded a Diploma.]

Embroidered Handkerchief, exhibited by D. Samuels. This exquisite piece of work, representing the Pavilion, was done by a young lady of this city, it taking eleven days of constant stitching, for which Mr. Samuels paid her $45. His object is to establish an institution in this city, where ladies can have any quality of lace repaired and beautiful embroidery done, in less time than it would take to send the order to Europe. As he is a very worthy citizen and already gives employment to a great number of people, we wish him every success, and would award him a Special Diploma. [Awarded a Diploma.]

D. Samuels also exhibits a real Point Lace Flounce, of great value, mixed Lace Applique, and real Point; also, samples of Duchess Laces, which are very choice. Any lady owning such laces, which may need mending, can have them done by calling upon Mr. Samuels at his establishment on Third Street. We would call their attention to this subject, and think Mr. Samuels worthy of Special Notice.

Silk and Cotton Corsets, by M. Freud. We find this a fine assortment, and well made. We would call ladies' special attention to their Shoulder Brace Corsets, invented by themselves, as being just the article for a woman or child troubled with any weakness that prevents them from keeping the body in an upright position. As this is quite a branch of industry in this city, we consider it worthy a Special Diploma. [Awarded a Diploma.]

Improved Tuck Markers. Invented by J. H. Mooney, can be used on several machines, and are very convenient: award, a Diploma. [Awarded a Diploma.]

The Pacific Straw Works exhibit a very fine collection of Straw Hats, Bonnets, etc., which are equal in finish to any of the imported, and well merit a Diploma. [Awarded a Diploma.]

H. Friedlander & Co. exhibit a great variety of Ladies' and Childrens' Underwear, where purchasers can find both quality and price to suit their tastes, as we should judge from the prices affixed. As he employs so many needle-women in the manufacture of these goods, we would give him a Diploma.

Keane & O'Connor exhibit a case of charming variety, consisting of Velvets, Silks and Laces, where any lady could suit her taste. As they are all imported, we would give them Honorable Mention.

A very elegant display of Necktie, Bow Knots, etc., is made by Mrs. A. H. Makins. We would call the gentlemens' attention to her goods, and they are well worthy of a Diploma. [Awarded a Diploma.]

S. Rosenblatt exhibits Silk and Velvet Suits, all designed at his establishment, which are well and tastily made. As he is not in for competition, we award him Honorable Mention.

T. Rodgers Johnson exhibits a fine display of Naval and Military Goods, also Masonic, Odd Fellows' and other Orders of Regalia, of superior quality. A very fine collection, and worthy of a Diploma. [Awarded a Diploma.]

Locan & Co. made a charming display of many qualities of beautiful goods consisting of Ivory, Porcelain, Parian Marble and Bronze, also gilt goods, each article of great beauty, and well worthy the attention of connoisseurs. As they are all imported goods, we can only give them Honorable Mention.

Crape and Tarletan Collars and Cuffs. Mrs. M. L. Morgan. We find them very tastily and neatly made, and, if done by herself, are well worthy of a Diploma.

Rag Carpets, by Alexander Mackay. We find this a very useful and economical branch of industry, where for a small sum persons can have carpets made, or buy them ready made, at from 75 cts. to $1 per yard. We would call the attention of ladies, who desire such carpets for cheapness and durability, to this manufacture, and we consider Mr. Mackay deserving of a Special Diploma.

Fancy Costumes, by Mrs. S. F. Paullin. Costumes very pretty, for which we award a Diploma.

Two Fancy Quilts, very pretty effect, by an old lady 76 years of age; one of them made in seven days. We award a Diploma. [Awarded a Diploma.]

Pillow Cases trimmed with hand-made Linen Lace, by Mrs. A. Cordes, a Diploma.

Knitted Bed Quilt in 630 pieces, also section of Bed Quilt in 240 pieces, with eight pairs of knitted Socks, by Mrs. George Sutherland, aged 69 years; award, a Diploma. [Awarded a Diploma.]

Parlor Screen, very fine, by Miss W. Gibbons. Diploma. [Awarded a Diploma.]

Afghan. by Miss E. Whipple, very handsome. Diploma. [Awarded a Diploma.]

Worked Baby-suit, by Miss E. C. Walker; beautiful, and done by hand; a Diploma. [Awarded a Diploma.]

Silk Quilt Block-work, very pretty, by Miss Addie Hyatt. Diploma. [Awarded a Diploma.]

Chenille Picture, by Miss P. V. Gabbs. Award a Diploma. [Awarded a Diploma.]

Anti-Macassars, by Mrs. G. W. Goodnow. A Diploma. [Awarded a Diploma.]

Silk Quilt, by Mrs. E. Chamberlain, "Log Cabin," and very handsomely arranged. A Diploma. [Awarded a Diploma.]

Silk Quilt, (unfinished,) Log Cabin style, very pretty, by Mrs. Horton. A Diploma. [Awarded a Diploma.]

Silk Quilt, "Log Cabin," by Mrs. Truebody. A Diploma. [Awarded a Diploma.]

Tatting Handkerchief and Collar, by Miss S. A. Nichols. For ingenuity displayed, a Diploma. [Awarded a Diploma.]

Tatting, 24 samples, by Mrs. E. C. Hurlburt. For variety of samples, award a Diploma. [Awarded a Diploma.]

A beautiful Basket of Worsted Flowers, by Mrs. E. Minturn. A Diploma. [Awarded a Diploma.]

Miniature Esquimaux Canoe, by Edward Vanderleith, a Diploma.

Fancy Rag Mat, by Mrs. Julia L. Middlemas; very pretty, with white ground and border of flowers, showing taste. Award, a Diploma. [Awarded a Diploma.

The Committee feel that every one in this Class have had *justice done them*. In regard to the Quilts, there are some few that are more special than others on account of the ages of those making them. Then again, if any one of the remaining Quilts is worthy of a premium, nearly every other one is equally deserving. We do not believe in encouraging this character of work, and would therefore call your attention particularly to those branches herein named, that give employment to the many, as the real objects of Premium Awards.

All of which is respectfully submitted.

MRS. CAPT. CONNOR.
LIZZIE F. REEVES.
MRS. S. BROWN.
MRS. W. E. DOMETT.
MRS. C. DAM.

DIVISION VIII.

CHEMICAL PROCESSES AND PRODUCTS.

NOTWITHSTANDING the interest and value attached to the improvements constantly making in smelting apparatus, and new and important improvements going on in the more economic modes of reducing the rich and valuable mineral products of this coast, the exhibit in this department was by no means equal to the expectation of parties who take a deep interest in the matter. Some of the specimens of this department, although but limited in extent, exhibited a decided improvement, giving a favorable indication of what may reasonably be anticipated in this line in the future. While human ingenuity is taxed to its utmost limits to devise new and more economic facilities in every department of manufactures, and the aids of science brought to bear upon all other important operations of life, the advance in this field, which holds out such flattering inducements and offers the fullest remuneration in the shape of emoluments and rewards, is comparatively slow and the results of costly experiments have, in the end, proved alike uncertain and unsatisfactory. Could the hundreds of thousands thrown away through shallow pretence, culpable ignorance and criminal recklessness, in this most important department of our local interests, be made available in its advancement at the present time, the result would prove of incalculable benefit.

The furnishing of cheaper methods of illumination, having for some years past been the subject of much attention and continued experiment in the display of new and more economic apparatus for generating gas, was a leading feature of this department and attracted much attention.

Every detail of that department comprising within its purview the creature comforts of life was fully and fairly represented, and every visitor from abroad who saw the goodly array had ocular and demonstrative proof that California is indeed a land flowing with wine, milk and honey. In so large and varied an array it is difficult to enumerate each class or particularize individual merit. The exhibit made, however, of the product of a new and important feature in our domestic manufactures is deserving more than a passing notice. The samples exhibited by the California Beet Sugar Company were a most gratifying evidence of the triumph of energy and perseverance over a combination of obstacles that at the start seemed almost insurmountable. The success of the

manufacture of beet sugar in California is fully demonstrated to be a fixed fact. The soil and climate of this State favor the largest yields of the best quality of the raw material, of which a large crop was raised during the past season, and, with commensurate enlargement and improved machinery, the manufacturers have entered upon their work with renewed spirit, encouraged by the favorable reception their first product has met with from the public.

The exhibit of native Wines and Brandies, a department in which Californians take peculiar pride, was large and varied, every grape-growing district of the State being largely and creditably represented. So extensive and varied were these samples, many of them possessing peculiar excellences, and all exhibiting qualities indicative of decided improvement in this leading manufacturing interest of this portion of the Pacific Coast, that it was difficult to determine the relative merits of each.

The successful product of the grape in this region, for near a hundred successive years, has thoroughly demonstrated the peculiar adaptability of our soil and climate to this purpose; and the fact that from the primitive plantings of the Spanish missionaries, on their first advent to this fertile land, the number of vines has increased to over thirty millions, is of itself the best evidence of the importance it has assumed. Every portion of the State, both valley and mountain, has proved most favorable to the production of the grape, and the annual wine product is estimated at something like six millions of gallons; the increased number of vines and the abundant crop of last season will probably exceed this figure. The county of Los Angeles, the oldest and most extensive grape-growing region of the State, produces one million gallons yearly, and Sonoma, ranking next, produces three hundred and fifty thousand.

DIVISION VIII.—CLASS 33.

METALLURGIC PROCESSES, ROASTING AND SMELTING FURNACES, Etc.

101. J. C. Jung, Assay Furnace.
256. J. C. Davison, Babcock Fire Extinguisher.
257. " " Self-Acting Fire Engine.
258. " " Fire Tank.
659. John Taylor & Co., two Assay Furnaces.
661. Joseph Dixon, Crucible Company, Black Lead Crucibles.
1336. Pacific Pneumatic Gas Company, Gas Generating Machine.
1470. Roach & Formhals' Machine for roasting Quicksilver and other Ores.
127. J. L. Bartlett, Stockton Portable Gas Machine.
1883. Atmospheric Gas Company, Atmospheric Gas Machine.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to adjudge articles on exhibition in Class 33, Division VIII, beg leave to submit the following report:

To the Gas Generating Machine, Catalogue No. 1336, Entry No. 677, the First Premium.

This Gas Generating apparatus commends itself to your notice for the following reasons :

1. The first cost of their *ten-light* machine ranges from $200 to $250, and of a *hundred-light* from $500 to $1,000, as governed by position.

2. This gas is made by forcing air through gasoline by a simple pump, which is worked by a kind of clock-weight arrangement that is easily wound up by one man when the gas is needed for use, and but once per day afterwards, and no *fires*, *retorts*, nor *running expenses* of any kind are incurred.

3. The gasoline tank is *buried* some four or five feet deep in the ground, which regulates the *temperature* and obtains absolute safety during its use. It is filled during daylight, once every *few weeks*.

4. The light is even superior to "*coal gas ;*" the products of combustion are of an agreeable smell and less injurious to man and silverware.

5. The cost of each light is said to be one cent per hour.

6. An extraordinary amount of light is obtained from a small amount of liquid gasoline, so that long carriage is cheap.

7. The apparatus is so simple that it cannot be easily deranged, and so efficient as shown by the sixty burners that are in nightly operation at this Fair.

8. In mining for gold and silver, by the use of this light all grease will be avoided, which, from candles, produces such deleterious effects during amalgamation.

9. As regards fire, it is much safer than the candle for house, battery, or timbered mines.

10. The trifling first cost, and the subsequent but *nominal* expense of running, afford means for the illumination of mines, mills and houses, which, up to this time, could not be obtained because of the much greater first and running costs of coal gas.

Catalogue No. 147, Entry No. 700. Machine for Roasting Quicksilver and other Ores.

Your Committee would make honorable mention, and call the attention of those using apparatus for condensing volatile metals by passing fumes through water, to the patented invention of Roach & Formhals, and especially to that feature embraced in the combined suction and blast screw. [Awarded Silver Medal.]

All of which is respectfully submitted.

J. S. PHILLIPS.
ALMARIN B. PAUL.
CHARLES R. STEIGER.

SUPPLEMENT TO THE FOREGOING.

Catalogue No. 256, Entry No. 261. The Babcock Fire Extinguisher is a very *portable and efficient apparatus ;* and as we regard it as a very useful means for extinguishing fires during *initial combustion* of houses that are situated on *high, dry* situations—by the means of this *readily prepared* gas—we are justified in recommending the award of a Diploma. [Awarded a Diploma.]

Catalogue No. 1883. The Atmospheric Gas Machine. This is, strictly speaking, a portable gas machine, which is well adapted for the illumination of houses and single buildings, and should be classed apart from the Pneumatic Generator, which can be used for any number of lights, from the candle or lamp to the introduction of coal gas. It is cheap, both for first and running cost, easily used, and affords a good and pleasant light. We recommend the award of a Diploma. [Awarded a Diploma.]

Catalogue No. 127, Entry No. 216. The Stockton Portable Gas Machine is an available means for producing a good and cheap gas light, where but a few lights are required, and we recommend it for the "honorable mention" of this Society.

All of which is respectfully submitted.

J. S. PHILLIPS.
ALMARIN B. PAUL.

DIVISION VIII.—CLASS 34.

PROCESSES AND PRODUCTS OF DOMESTIC ECONOMY, FLOUR, BREAD, CRACKERS, MACCARONI, Etc.

20. R. & F. Tooth & Co., samples of Extract of Meat.
896. Ross, Dempster & Co., samples of Australian Preserved Meats.
898. " " Condensed Milk, Extract of Coffee, Chocolate, Paste and Oysters.
1220. Boston Cracker Bakery, samples of Cakes and Crackers.
1228. Alvarado Beet Sugar Company, samples of White, Crushed, Crystalized, Granulated and Brown Beet Sugars.
1263. Brignardello, Machiavello & Co., samples of Vermicelli.
1271. P. D. Code & Co., samples of Jellies, Jams, Preserves, Pickles, Canned Fruits and Vegetables.
161. W. H. Stearns & Co., samples of Honey.
278. Erzgraber & Goetjen, samples of Pickles.
279. " " " Katsups.
281. " " " Sauces.
283. " " " Preserved Fruits, Meats, etc.
624. Marden & Myrick, samples of Coffee, Spices, etc.
906. Coghill, Lyons & Co., samples of Starch.
907. " " " Corn Starch and Maizena.
908. " " " Dessicated Cocoanut.
1001. George Haas & Co., Display of Candies.
1081. California Cracker Company, Crackers and Cakes.
1088. Brignardello, Machiavello & Co., Maccaroni, Vermicelli, etc.
1090. W. K. Dietrich, Hams, Bacon and Lard.
1094. Dewey & Co., Jar of Cherries.
1315. F. A. Hatch, Honey, Butter, Lard and Cheese.
1316. " Ham and Bacon.
1349. D. Ghirardelli, Coffee, Spices, Chocolate, etc.
483. W. H. Stearns & Co., eight varieties of Honey.
484. " samples of Beeswax.
717. Conrad Thaler, Loaf of Bread, fifty pounds weight.
742. R. Lehman, samples of different kinds of Candies.
773. Oakley's Mills, samples of different kinds of Meals, Flour, etc.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee, appointed to examine and adjudge articles exhibited in Division VIII, Class 34, respectfully recommend the following awards:

Entry No. 13, Catalogue No. 20. Samples of Extract of Meat, R. & F. Tooth & Co., a Diploma. [Awarded a Diploma.]

Entry No. 170, Catalogue 876. Samples of Australian Preserved Meats, Ross, Dempster & Co., a Diploma. [Awarded a Diploma.]

Entry No. 171, Catalogue 898. Condensed Milk, Extract of Coffee, Chocolate, Paste and Oysters, Ross, Dempster & Co., Certificate of Merit.

Entry No. 183, Catalogue No. 1220. Samples of Cakes and Crackers, Boston Cracker Bakery, a Diploma. [Awarded a Diploma.]

Entry No. 191, Catalogue No. 1228. Samples of White, Crushed, Crystalized, Granulated and Brown Beet Sugars, Alvarado Beet Sugar Company, Gold Medal. [Awarded Gold Medal.]

Entry No. 720, Catalogue 1263. Samples of Vermicelli, Brignardello, Machiavello & Co., a Diploma. [Awarded a Diploma.]

Entry No. 727, Catalogue No. 1271. Samples of Jellies, Jams, Preserves, Pickles, Canned Fruits and Vegetables, P. D. Code & Co., a Diploma. [Awarded a Diploma.]

Entry No. 271, Catalogue No. 281. Samples of Sauces, Erzgraber & Goetjen, a Diploma. [Awarded a Diploma.]

Entry No. 271, Catalogue No. 283. Samples of Preserved Fruits, Erzgraber & Goetjen, a Diploma. [Awarded a Diploma.]

Entry No. 271, Catalogue 283. Samples of Preserved Meats, Erzgraber & Goetjen, a Diploma. [Awarded a Diploma.]

Entry No. 297, Catalogue No. 624. Samples of Coffee, Spices, etc., Marden & Myrick, a Certificate of Merit. [Awarded a Diploma.]

Entry No. 339, Catalogue No. 906. Samples of Starch, Coghill, Lyons & Co., Certificate of Merit.

Entry No. 339, Catalogue No. 907. Samples of Corn Starch and Maizena, Coghill, Lyons & Co., Certificate of Merit.

Entry No. 339, Catalogue No. 908. Samples of Dessicated Cocoanut, Coghill, Lyons & Co., Honorable Mention.

Entry No. 388, Catalogue No. 1001. Display of Candies, George Haas & Co., Certificate of Merit. [Awarded a Diploma.]

Entry No. 638, Catalogue No. 1081. Crackers and Cakes, California Cracker Company, a Diploma, [Awarded a Diploma.]

Entry No. 644, Catalogue No. 1090. Display of Hams, Bacon and Lard, W. K. Dietrich, Silver Medal. [Awarded a Silver Medal.]

Entry No. 662, Catalogue No. 1315. Display of Honey, Butter, Lard and Cheese, F. A. Hatch, Certificate of Merit.

Entry No. 684, Catalogue No. 1349. Display of Coffee, Spices, Chocolate, etc., D. Ghirardelli, Certificate of Merit. [Awarded a Diploma.]

Entry No. 458, Catalogue No. 483. Display of eight varieties of Honey, W. H. Stearns & Co., a Diploma.

Entry No. 464, Catalogue No. 484. Samples of Beeswax, W. H. Stearns & Co., Certificate of Merit.

Entry No. 460, Catalogue No. 717. Display of Loaf of Bread, fifty pounds weight, Conrad Thaler, Honorable Mention.

Entry No. —, Catalogue No. 742. Samples of different kinds of Candies, R. Lehman, Certificate of Merit.

Entry No. —, Catalogue No. 773. Display of different kinds of Meals, Flour, etc., Oakley's Mills, Honorable Mention. [Awarded a Diploma.]

All of which is respectfully submitted.

E. S. CARR.
J. B. WOOSTER.
C. J. HAWLEY.

DIVISION VIII.—CLASS 35.

SEC. A.—SPARKLING AND STILL WINES, LIQUORS, ETC.

21. R. & F. Tooth & Co., six bottles of Queensland Rum.
385. G. Migliavacca, samples of Native Wine of 1870.
392. Joseph Putser, bottle of Pure Native Wine from Hungarian Grapes.
861. I. Landsberger & Co., samples of different kinds of Wines.
862. " " " Champagne.
865. C. W. Stuart, samples of Foreign Wine of 1870.
866. H. T. Hutchinson, samples of Grape Brandy of 1867.
867. Briggs & Haskell, samples of Grape Brandy of 1865.
868. J. B. Frisbie, samples of Port Wine of 1867.
869. Dr. Crane, samples of Port Wine of 1870.
870. O. W. Craig, samples of White Wine of 1868.
871. F. Schleifer & Co., four casks and samples of Brandy of 1870.
897. Ross, Dempster & Co., samples of Australian Whisky and Gin.
1265. Chenery, Souther & Co., samples of Bourbon Whisky.
112. M. Keller & Co., sample cases of California Wines.
120. " " " Brandy.
138. Mrs. George Lamb, two bottles of Domestic Black Prince Grape Wine.
614. Taylor & Hallett, California Wine.
615. " " Brandies.
985. B. N. Bugbey, California Wines.
1086. J. D. Thompson, Pony, Pet and Favorite Whisky and Blackberry Brandy.
772. Clement Von Detten, ten varieties of Native Wines.
1113 to 1117, inclusive. Dressel & Co., samples of Wines.
1173. A. Finke, Sparkling Wines.
1193. West Bros., samples of Wines.
1144. Eberhart & Lachman, samples of Wines and Brandies.
898. Ross, Dempster & Co., samples of Wines, Rum and Brandy.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Class 35, Sec. A, of Division VIII, beg leave to submit the following report:

Your Committee, looking upon the Wine-growing interests of California as among the most important of the industrial pursuits of the State, deem this a fitting opportunity to present a few general ideas on the subject of Viniculture.

Although it is well-known that the vine has been cultivated for nearly or quite a century in California, by the old Mission Fathers, it is comparatively recent that a general interest has been taken in the cultivation of the Grape. While your Committee do not propose to suggest to the many Viniculturists, who have successfully followed the Wine-making business for years, any new ideas, yet to the hundreds who are annually planting new vineyards a few of the important requisites to ultimate success may not be amiss. In the absence of any combined organization of the Wine Growers of the State, the opportunity afforded by your exhibition may be profitably used to collect and compile such results as may be of general benefit.

There are four essential requisites to the successful manufacture of Wine, the failure of any of which will result in the production of a common or in-

ferior article. A suitable soil, a warm climate, and proper exposure; the kind of grape adapted to the same; and last, but not least, the proper curing of the juice.

It is greatly to be wondered at that a business, in its infancy requiring such a combination of circumstances to attain perfection, should produce such a mass of common and inferior quality, and so little that is really superior. With the best soil and the finest climate in the world for the production of the grape, our wines should be able to defy competition.

There are thousands of acres in nearly every county in this State well adapted to the Wine culture. The most suitable is a warm, gravelly or sandy soil; the best is that of volcanic origin, and, most commonly, land entirely unfitted for the production of cereals is best adapted to this purpose, and in all cases far enough removed from the ocean to be protected from the ocean fogs or sea breezes. Strong alluvial or "adobe" soils are entirely unfitted for this purpose, producing a weak and watery wine, with a strong ground flavor.

The selection of the kind of Grape most suitable must depend upon the judgment of the cultivator and the kind of Wine he intends to manufacture. There is no greater error than the frequent attempt to manufacture several kinds of wine from the same grape and vineyard.

Another fault, but one easily remedied, is the imperfect fermentation of the juice, which was shown in several samples exhibited for our inspection, by the cloudy or muddy appearance of the liquor, which in other respects was of fair quality. In nearly every instance the wines showing imperfect fermentation were of the heaviest or strongest class. Too much care cannot be taken in the thorough fermentation of wines of this character, even by artificial heat, if necessary.

The few samples of Brandy exhibited were fair in quality, the best being of last year's distillation, probably resulting from a better or improved still used in their manufacture.

Your Committee have been led to the above general conclusions from former experiences, and particularly from the examination of nearly one hundred and fifty samples submitted to their inspection.

In conclusion, and in view of the great opportunities offered by the Institute for the collection of statistics and the general diffusion of information, we would recommend in any future Exhibition that the exhibitors in their department be requested to describe the soil, climate, exposure, time of picking, as to degree of ripeness, fermenting, temperature, etc., all of which will assist in improving the wine culture of this Coast, and perfecting an agricultural interest which will in a few years stand at the head of the industrial pursuits of California.

The Committee recommend the following awards:

To B. N. Bugbey, for the best exhibit of Wines and Brandies from foreign grapes of his own vineyard, a Gold Medal. [Awarded Gold Medal.]

To Eberhart & Lachman, for the best Madeira and Hock of California production, a Silver Medal. [Awarded a Silver Medal.]

To I. Landsberger & Co., for a full exhibit of Still and Sparkling Wines, a Diploma. [Awarded a Diploma.]

To George West, for best Sherry and Port Wines, a Diploma. [Awarded a Diploma.]

To Dressel & Co., for best White Wine from Mission Grape, a Diploma. [Awarded a Diploma.]

To Clement Von Detten, for best White Wine from Foreign Grape, a Diploma. [Awarded a Diploma.]

To M. Keller, for best exhibit of Wines and Brandies from Native Grape, a Diploma. [Awarded a Diploma.]

To A. Finke, for best Champagne, a Diploma. [Awarded a Diploma.]

To Chenery, Souther & Co., for best exhibit of Whisky, a Diploma. [Awarded a Diploma.]

To Taylor & Hallett, for Posa Caliente Wines, Honorable Mention.
To H. F. Hutchinson, for good sample of Brandy, Honorable Mention.

All of which is respectfully submitted.

MILO HOADLEY.
E. S. CARR.
J. DE LA MONTANA.

DIVISION VIII.—CLASS 35.

SEC. B.—FERMENTED, CEREAL AND VINOUS PRODUCTS.

19. R. & F. Tooth & Co., two hogsheads Tooth & Co.'s No. 3 Ale.
863. I. Landsberger & Co., Wine and Brandy Bitters.
1217. Wm. Hawkins, samples of Wonser's U. S. Indian Root and Cocktail Bitters.
1275. Swan Brewery Company, cases of Bottled Ale and Porter.
121. M. Keller & Co., sample cases California Wine Bitters.
280. Erzgraber & Goetjen, Cider.
672. F. & P. Cassin, Grape Brandy Bitters.
673. " " Root "
682. McMillan & Kester, Syrups.
683. " Ginger Wine.
684. " Cordials.
685. " Bitters.
686. " Essences.
1047. H. Wiggett, Root, Spruce and Ginger Beer.
1055. Mason's Brewery, Ale and Beer, in casks and bottles.
1080. D. R. Provost, California-made Wine and Cider Vinegar.
1087. J. D. Thompson, Stomach and Bourbon Bitters.
422. H. Epstein, IXL Bitters.
422. A. Bona, samples of Squarza Punches.
489. " Bitters and Cordials.
724. R. H. McDonald & Co., Vinegar Bitters.
762. Schaeffer, Walters & Co., Pipifax Bitters.
1191. Burton Bottling Company, Ale and Porter.
1837. Eberhart & Lachman, Bitters.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee appointed to examine and adjudge articles exhibited in Division VIII, Class 35, Section B, recommend that the following premiums be awarded:

To Wonser's U. S. A. Bitters for cocktails, exhibited by Wm. Hawkins, a Diploma.

To Eberhart & Lachman's Cocktail Bitters, Honorable Mention.

To Eberhart & Lachman's Wine Bitters, a Diploma.

To Landsberger's Wine Bitters, Honorable Mention.

To McMillan & Kester's Stomach Bitters, a Diploma.

To Thompson's Stomach Bitters, Honorable Mention.

To Cassin's Brandy Bitters, a Diploma.

To Landsberger's Brandy Bitters, Honorable Mention.

To Pipifax Bitters, exhibited by Schaeffer, Walters & Co., a Diploma.

To Orange Bitters, exhibited by McMillan & Kester, a Diploma.

To Wormwood Bitters, exhibited by McMillan & Kester, a Diploma.

To Cordials, exhibited by McMillan & Kester, a Diploma.

To Cordials, exhibited by A. Bona (successor to Squarza), Honorable Mention.

To Punches, exhibited by A. Bona (successor to Squarza), a Diploma.

To Syrups, exhibited by McMillan & Kester, a Diploma.

To Spruce, Ginger and Root Beers, exhibited by Wiggett & Co., a Diploma. [Awarded a Diploma.]

To best Ale (Foreign), on exhibition by Tooth & Co., Australia, a Diploma. [Awarded a Diploma.]

To Cider, exhibited by Erzgraber & Goetjen, a Diploma. [Awarded a Diploma.]

To Ale, exhibited by Swan Brewery, a Diploma. [Awarded a Diploma.]

To Ale, exhibited by Mason Brewery, Honorable Mention.

To Porter, exhibited by Swan Brewery, a Diploma.

To Porter, exhibited by Mason Brewery, Honorable Mention.

Second Premium to Pure Wine and Cider Vinegar of the best quality, exhibited by D. R. Provost. Awarded a Diploma.]

All of which is respectfully submitted.

CHARLES R. STEIGER.
HOWARD CHAPMAN.
JACOB REGENSBURGER.

DIVISION VIII.—CLASS 36.

CHEMICAL AND PHARMACEUTICAL PRODUCTS, ACIDS, ALKALIES, Etc.

395. N. S. Coon, samples of Diamond Polish.
396. " " Nevada White Sage Company's Preparation for the Hair.
516. S. Pillsbury & Co., samples of Washing Fluid and Liquid Laundry Blue.
813. J. F. Fugazi, case containing Oriental Hair Dye.
814. " " " the Fountain of Youth Hair Restorer, Pomade, Cologne Water, etc.
890. Henry Lake & Co., specimens of Shoe Blacking.
1241. San Francisco Gas Company, samples of manufactured Ammonia.
1260. F. R. Amos, samples of different kinds of Soaps.
1273. California Chemical Paint Company, samples of Paints of various kinds and shades.
1367. Mrs. M. E. Doherty, Perfumery and Fancy Articles.
115. C. F. Washburn, Fox's Rheumatic Cure.
141. Knowlton & Co., specimens of Liquid Blueing.
289. A. M. Loryea & Co., Unk Weed Remedy.

300. Dr. Levi W. Taylor, Diamond Tooth Paste.
662. Joseph Dixon Crucible Company, Lubricating Plumbago.
663. " " " Stove Polish.
669. L. M. Gautier, samples of Cleaned Blankets and Laces.
670. " " Half-cleaned Blankets and Laces.
677. Winter, Maurer & Co., California-made Candles.
679. " " Stearine Statues, Casts and Busts.
930. Richard & Darden, samples of Anti-Scale Compound for Steam Boilers.
932. Painter & Calvert, Perfumery, Drugs, etc.
407. W. Goldstein, case of Perfumery.
412. W. M. Boyd, Yeast Powder.
413. " Cream Tartar.
414. " Baking Powder.
429. Eureka Match Company, samples of Matches.
431, 432. J. G. Steele & Co., Pharmaceutical and Toilet Articles.
441. Standard Soap Company, Fancy and Domestic Soaps.
442. " " Candles.
724. R. H. McDonald & Co., Sapoaine Hair Restorative, Flavoring Extracts, Tooth Powders, etc.
759. Charles E. Hinckley, case of Twiaba.
1153. John F. Snow & Co., two cases of Dyed and Cleaned Goods.
1652. George C. Thompson, Mineral Waters.
1661. California Bleaching Soap Company, California Bleaching Soap.
1715. F. B. Taylor & Co., Downer's Machinery Oil.
1716. " " Illuminating Oil.
1719. " Taylor's Patent Safety Fluid.
1717. " Sapolio.
1472. Madame De Young, Toilet Paste.
1787. Pacific Oil and Lead Works, Castor, Cocoanut, Raw and Boiled Linseed Oil and Oil Cake Meal.
1646. Mosheimer & Stevenot, samples of Borax.
1896. Painter & Calvert, Pharmaceutical Preparations.
1899. Crane & Cording, Sulphate of Copper.
1156. Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

The Committee, appointed to examine and adjudge articles exhibited in Class 36, Division VIII, respectfully recommend the following awards of premiums:

Entry No. —, Catalogue No. —. Brown's French Blacking, etc. Honorable Mention.

Entry No. 163, Catalogue No. 890. Shoe Blacking. Henry Lake & Co. Diploma. [Awarded Diploma.]

Entry No. 975, Catalogue No. —. H. & L. Axle Grease. Diploma. [Awarded a Diploma.

Entry No. 701, Catalogue No. 1241. Ammonia manufactured from Gas liquor. San Francisco Gas Company. A Silver Medal. [Awarded Silver Medal.]

Entry No. 717, Catalogue No. 1260. Samples of different kinds of Soaps. F. R. Amos. Fishbeck Soap Company. Diploma. [Awarded a Diploma.]

Entry No. 729, Catalogue No. 1273. Paints of various kinds and shades. California Chemical Paint Company. Silver Medal. [Awarded a Diploma.]

Entry No. 322, Catalogue No. 677. California-made Candles. Winter, Maurer & Co. Mission Candle Works. Gold Medal. [Awarded a Gold Medal.]

Entry No. 351, Catalogue No. 932. Perfumery and Pharmaceutical Preparation. Painter & Calvert. Diploma. [Awarded a Diploma.]

Entry No. 405, Catalogue No. 407. Best display of manufactured Perfumery. W. Goldstein. Diploma. [Awarded a Diploma.]

Entry No. 432, Catalogue No. 441. Fancy and Domestic Soaps. Standard Soap Company. Diploma. [Awarded a Diploma.]

Entry No. 838, Catalogue No. 1652. Artificial Mineral Waters. Geo. C. Thompson. Diploma. [Awarded a Diploma.]

Entry No. 420, Catalogue No. 429. Matches. Eureka Match Company. Diploma. [Awarded a Diploma.]

Entry No. 840, Catalogue No. 1660. California Bleaching Soap. California Bleaching Soap Company. Honorable Mention. [Awarded a Diploma.]

Entry No. 773, Catalogue No. 1646. Manufactured California Borax. Mosheimer & Stevenot. Diploma. [Awarded a Diploma.]

We would also report that in relation to the Hair Restorers and Dyes, embraced in Class 36, also with other articles, such as Liquid Blueing, Polishing Powders, Tooth-Pastes, etc., the composition of which is unknown to your Committee, were not considered within their province to pass judgment upon, and were therefore omitted.

All of which is respectfully submitted.

LOUIS FALKNEAU.
A. OSGOOD.
WM. T. WENZELL.

DIVISION IX.—CLASS 37.

APPLIANCES FOR THE HORTICULTURIST, OBJECTS OF GARDEN ORNAMENTATION, Etc.

983. J. M. Eckfeldt, assortment of Wire Goods.
1057. San Francisco Wire Works, Wire Goods.
1058. " "
1061. John McCormick, Wire Goods.
1062. " "
1587, 1594, 1599, 1602 and 1603, Japanese.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco :

The Committee, appointed to examine and adjudge articles exhibited in Class 37, of Division IX, recommend the following awards:

Entry No. 377, Catalogue No. 983. Assortment of Wire Goods, exhibited by J. M. Eckfeldt. First Premium. [Awarded a Silver Medal.]

After a careful examination of Entry No. 619, Catalogue No. 1057 and 1058, Wire Goods, exhibited by H. C. Gruenhagen & Co., and Entry No. 622 and 623, Catalogue Nos. 1061 and 1062, Wire Goods, exhibited by John McCormick, we find no superiority between the goods of either of the two exhibitors worthy of note. The articles seemed to have all been manufactured by the same workmen, and are of a superior quality. We therefore recommend that Messrs

Gruenhagen & Co., and Mr. John McCormick receive each the Second Premium for exhibition of Wire Goods. [Diploma awarded to Gruenhagen & Co.]

In Catalogue Nos. 1586, 1587, 1294, 1599, 1602 and 1603, Japanese Goods, there being no competition in this class of goods, we recommend a Premium for the superior workmanship in the articles exhibited.

All of which is respectfully submitted.

ROBERT B. WOODWARD.
A. C. MORSE.
EDWARD BOSQUI.

ARTICLES TOO LATE FOR COMPETITION.

The articles in the Exhibition named in the following list were entered too late for competition for awards :

1456. Pacific Pump Manufactory, eleven Cowing Pumps.
1458. E. O. Hunt, two Windmills.
1459. " two Models of Windmills.
1463. Mrs. Crane & Ashbury, samples Magic Hair Curler.
1466. Sophie Harris, Worsted Buggy Robe.
1467. C. B. Brown, Magic Whip Hangers.
1468. " one Card Rack.
1469. T. B. McDonald, Model of 3-gang Plow.
1471. Jacob Price, Model of Price's Hay Press.
1477. A. V. Smith, Model of Patent Stove Truck.
1478. " Steamboat Gang-plank.
1479. " Skid for a Cellar-way.
1480. Suplee Needle Company, samples of Open-eyed Needles.
1482. J. H. Swain & Co., one Lifting Table.
1485. A. Hart, Oil Painting, "Barefoot Boy."
1748. Mrs. Sarah A. Reed, Patchwork Quilt.
1491. H. J. Barnum, samples of Hunter's Pruning Knives.
1746. C. G. Johnson, Models of Johnson's Portable Fence.
1747. Mrs. J. McNeil, Wreath of Shell Flowers.
1748. Charles Kelly, two frames Specimen Pen Pictures.
1749. J. E. Cohn, five books Specimens California Flowers.
1750. George Brewer, Plaster Bust.
1753. Larkins & Co., one Doctor's Phæton.
1411. Mrs. J. H. Nevins, two Hats made from Pine Leaves.
1438. Mrs. Cotter, Decalcomanie Sign.
1443. John Nicholson, one pair Concave Horse-shoes.
1444. Mrs. M. D. Carr, one Magnolia Flower.
1445. Mrs. H. Fitzgerald, one case Wax Flowers.
1446. " one Ring Woolen Tidy.
1448. A. Cadwell, sample of Wool from Cotswold Sheep.
1449. Mrs. W. B. Bromley, variety of Chinaware and Fancy Articles.
1450 " " Japanese.
1642. " one Chinese Picture of Steamboat.
1643. Adolph Lutgens, Drawing of a Vase.
1645. Mrs. Cotter, Flowers in Wax.
1648. Scribner & Hoffman, new style Silver-plated Show Case.
1649. Mrs. M. E. Gerrish, one frame Wax Flowers.
1684. Miss Julia McCarthy, large Worsted and Floss Figure.
1685. J. Spaulding, specimen of Wood prepared by Spaulding's patent process.
1728. Mrs. Caroline Boner, two Card specimens of Fillae Knitting.
1729. R. Lewellyn, one Sitka Indian god.

1733. Henry Owens, model of McCarty's Three-throw Anchor.
1739. Louis M. Henry, specimens of the Occidental Roller Skate.
1741. Nicola Zotezzi, model of Music Stand.
1743. H. Casebolt, Portrait in Oil, by Knox of Boston.
1759. Charles C. Rueger, Mechanical Drawing.
1762. Dr. J. C. Tucker, one Oil Painting.
1763. Hawkins & Cantrel, one Force Pump.
1781. E. Bingham, Chinese Grass, Prepared by Messrs. Manning & Collyear, London.
1798. Mrs. M. S. Ball, Oil Painting and Crayon Drawing.
1799. O. Goldenberg, Picture of a Man-of-War, worked in Silk.
1800. Blake & Robbins, samples of Straw Board.
1801. J. V. Ellis, Pair of Pattens, and Arm Chair.
1802. M. D. Laswell, one Deep Well Pump.
1803. Isaac Lamb, Crimped Mohair Silken Switches.
1804. T. J. Corning, model of Hay Press.
1806. J. L. Bardwell, Oil Painting.
1807. Samples of California Plaster, and Ornaments made from the same.
1898. James Crones, Ornaments cut in Wood.
1809. C. F. Brock, one Blakeslee & Williams' Steam Jet Pump.
1810. Mrs. C. W. Swanton, two Moss Pictures.
1812. Carl Porten, one Inlaid Table.
1813. Mrs. Swanton, Masonic Moss Picture.
1690. Miss Sarah H. Carson, Worsted Work.
1745. W. T. Adel, Adjustable Carriage Umbrellas.
1881. J. M. Cohen, Japanese Cabinets and Tables.
1882. Ademan & Newbert, samples of Smoked Salmon, etc.
1884. Hawkins & Cantrel, two Judson's Patent Governors.
1885. D'Alva Mosse, samples of Gas Stoves.
1886. Julius Ordway, specimens of Ores from Bristol District, Nevada.
1887. Robert Page, one Flint Lock Pistol.
1888. Miss Libbie West, Drawing in India Ink, Vase of Flowers.
1889. " Cheneille Embroidery Picture.
1890. J. M. Cohn, two Japanese Vases.
1891. " Japanese Cottage.
1892. Patrick Walsh, three Frames Architectural Drawings.
1893. J. P. Wingard, model for the construction of Vessels.
1894. P. L. Peters, Oil Painting, Portrait.
1895. Julius Deitrich, Improved Wood Saw.
1696. J. A. Bardwell, Oil Painting 200 years old.
1697. Pacific Iron Works, Cast Iron Pipes for Water and Gas.
1710. W. H. Webb, specimens of New Zealand Flax.
1711. Joshua Hendy, two Improved Governors for Steam Engines.
1712. Henry Baldwin, model of Ship made of Ivory.
1730. Madame Anna Getz, Medallion Head in Wax.
1721. Mrs. E. D. Kimball, one Water-color Painting.
1722, 1723, and 1724, Mrs. P. T. Gannon, Oil Paintings.
1727. A. A. Rosenberg, one Cabinet Organ.
1815. A. A. Rosenberg, case of California Shells.
1816. Miss Emma Olmstead, one Braided Pin Cushion.
1817. H. Hansen, Model of the New York Yacht "Dauntless."
1819. J. W. H. Purdy, Model of Flowers.
1820. Sophie Jordan, a Crochet Tidy.
1821. J. L. Bardwell, a Shark's Jaw.
1822. R. Hoskin, three Hydraulic Joints.
1823. H. Polly, Gopher Trap.
1824. H. Campion, one Portrait in Oil.
1825. Charles Page, Model of Sloop.
1826. Mrs. G. W. Blasdell, Photograph and Moss Wreath.
1827. H. E. Lea, Model of Washing Machine.
1829. J. E. Thayer, two Bent-wood Barrels.

1830. C. Romer, two Inlaid Centre Tables.
1832. Miss Fanny E. Gray, Masonic Emblem.
1833. Alex. Campbell, Oil Painting.
1834. Joseph Mosheimer, case of Gold Nuggets.
1835. Miss Jennie Farwell, case of Cocoons and Reeled Silk.
1836. Hattie M. Tuttle, sample of Penmanship.
1837. Wm. J. Campbell, five Duplex Lamps.
1838. Mrs. L. A. Ford, one Silk and Velvet Spread.
1839. James F. Hancock, Improved Parsons Washing Machine.
1840. B. F. Hughes, specimens of Minerals and Petrefactions.
1841. T. E. Spaids, Model of Compound Car Axle.
1842. J. L. Bardwell, Chair made of Ox Horns.
1843. A. S. Hallidie, from Dr. Macgowan, five specimens of Brick Tea.
1844. Moore & Weinman, case of Eastman's Penman's Assistant.
1845. G. B. Davis, samples of Norton's Door and Gate Springs.
1846. D. M. Robinson & Son, case of Shells.
1847. J. Stott, one small Cooking Stove.
1848. Haynes & Lawton, Silver-plated Amalgamating Plate for Mining.
1849. McNear & Bros., case of samples of Grain.
1850. Silas Shirley, model of Automatic Gate.
1851. " " two improvements on a Wagon Wheel.
1852. " Patent Hame Ties.
1853. E. V. Hurd, two Water Pressure Regulators.
1854. J. D. Bausher, samples of Refined Eastern Syrups.
1855 and 1863, Goodwin & Co., nine pieces of Silks and Reps.
1856. J. D. Bausher, samples of Can Openers.
1857. Mrs. E. D. Kimball, Water-color Painting.
1858. Shoenstein & Klein, one Grape Crusher and Stemmer.
1859. Michael Heverin, four Architectural Drawings.
1860. J. L. Bardwell, Shells and Dried Armadillo.
1861. Messrs. Pringle & Wood, model of a Pioneer Patent Oar.
1862. R. R. Strain, two Dry Earth Closet Commodes.
1864 and 1865, Domenico Tojetti, Oil Paintings.
1866. J. H. Clark. two Oil Paintings.
1867. Thomas O'Neil, samples of Glass Door Plates.
1868. Mrs. Tidball, one Painting on Copper.
1869. H. S. Tucker, samples of California-made Horse shoes.
1870. Wm. Hunt, one Euphorbia (form of a Ship.)
1871. Wilkinson & Carrol, one Revolving Die for cutting Gas and Water Pipe.
1872. Mrs. James Sullivan, Machine for making Paper Stamps for Embroidery.
1873. Brittan, Holbrook & Co., one Excelsior Pump.
1874. Mrs. A. C. Gray, one Washing Machine.
1875. Maggie Neville, Worsted Picture.
1876. " Handkerchief or Glove Box.
1877. " Portfolio.
1878. B. F. Hughes, samples of California Crystals.

NUMBER OF EXHIBITORS AND NAMES OF ARTICLES EXHIBITED IN EACH DEPARTMENT.

DIVISION	ARTICLES EXHIBITED.	CLASS...	SECTION	NUMBER
1	Raw Material.—Mineral Products	1	..	36
	Vegetable Products	2	..	16
	Animal Products	3	..	13
2	Machinery for Applying Power.—Steam Boilers, Generators	4	..	3
	Steam Engines and Appurtenances	5	..	20
	Machines for Transmitting Power	6	..	5
3	Machinery for Manufacturing, etc.—Mining Machinery, etc.	7	..	22
	Metal Working	8	..	4
	Wood Working	9	..	9
	Agricultural Implements, etc	10	A	37
	Steam Plows and Cultivators, etc	10	B	13
	Machinery for various manufacture, Sewing Machines, etc.	11	..	13
	Philosophical, Dental and Surgical Instruments	12	A	8
	Trusses, Orthopædical and Pharmaceutical Apparatus	12	B	11
4	Manufactures and Trades.—Metals, etc	13	A	25
	Locksmith Work	13	B	16
	Brass, Tin, Lead and Composite	13	C	21
	Manufactures in Wood	14	A	10
	" " Casks, Barrels, etc	14	B	9
	" " Furniture, etc	14	C	27
	" " Carriages, Wagons	14	D	20
	Manufactures in Glass, etc	15	..	12
	" Leather, Rubber and Gutta Percha	16	..	19
	" Wool, Cotton and Silk	17	..	14
	" Fibres and Pulp	18	..	7
	Various Manufactures not previously classed	19	..	15
5	Engineering and Architecture.—Naval Engineering, etc	20	..	5
	Military Engineering and Architecture	21	..	26
	Civil Engineering and Architecture	22	..	12
6	Works of Art.—Painting in Oil and Water-colors	23	..	74
	Sculpture, Cameo Cutting, etc	24	..	16
	Coloring, Staining and Embossing on Glass, etc	25	..	11
	Lithography, Engraving, Photography, etc	26	..	17
	Wax Work, Hair and Rubber Jewelry, etc	27	..	59
7	The Liberal Arts.—Printing, Publishing, Typography, etc.	28	..	16
	Book Binding, Stationery, etc	29	..	5
	Sign and Scenic Painting, Staining, Polishing, Graining, etc	30	..	9
	Musical Instruments	31	..	9
	Millinery, Dressmaking and other Needlework	32	..	92
8	Chemical Processes and Products.--Metallurgical	33	..	8
	Processes and Products of Domestic Economy	34	..	21
	Sparkling and Still Wines, Liquors	35	A	24
	Bitters, Cider, Ale, Porter, Beer, Vinegar	35	B	18
	Chemical and Pharmaceutical Products	36	..	34
9	Pomological and Horticultural.—Hot-houses, Fruits, Plants	37	..	4
	Miscellaneous—Too late for competition			155
	To which may be added 500 exhibitions of drawing from the Public Schools			500
	Total number of exhibitors			1520

EXHIBITORS

OF THE

EIGHTH INDUSTRIAL FAIR

OF THE

MECHANICS' INSTITUTE, 1871.

NAME.	NUMBER.	Division.	Class ....
A			
Acosta, Luz	715, 716	6	23
Adler, A	135	7	30
Ætna Iron Works	1067	3	7
Albion Pottery	1320	4	15
Allen, Clark & Co	970	4	14
Allen, Dr. H	1210	3	12
Allen, John	360	6	24
Amos, F. R	1260	8	36
Anderson, Mrs. A. J	114	7	32
Anderson, G	679	3	10
Anderson, William	748	3	10
Andrews, J. H	110, 111	3	10
Andrews, Miss L. F	563, 566, 883	6	23
Armstrong, Miss	394, 885	6	27
Armstrong, Miss	885, 900	6	27
Arthur, J. D. & Son	995	4	14
Ashton, John	1279	4	16
Asphaltum Pre sure Pipe Co.	1317	5	22
Atmospheric Gas Co	1833	8	33
Atwood & Bodwell	1306	2	6
Austin, M. E	1151, 547	4	19
Austin, M. E	548, 549	4	19
B			
Badger, W. G	732, 1111	7	31
Baker, Mrs A D	753, 754	6	27
Baker & Hamilton	966	3	7
Baker & Hamilton	645 to 657	3	10
Baker & Hamilton	644, 651	3	7
Ball, F. C	1272, 807	6	23
Ball, Mrs	509 to 512	6	23
Bandmann, Nielsen & Co	872	3	21
Bardwell, J. L	423	1	3
" "	173 to 199	6	26
" "	209 to 214	6	26
Barr, J. D	1223	4	19
Barringer, Mrs. E	1154	7	32
Barthel, M	1092	3	10
Bartlett, Mrs. E	357, 358	7	32
Bartlett, J. L	127	8	33
Barton, Mrs. M. A	704	7	32
Beach, C. C	1725	7	28
Beebe, Mrs. A	417	6	23
Behrendt, H. & Co	1013	4	16
Belle, Dr. E. O	832, 1147	3	12
Belshaw, William	1675	1	1
Bennett, J. H	265 to 273	3	9
Bennett, William	1099	1	1
Benton, Fred	1282	4	14
Benton, Miss M. F	833, 834	6	23
Benton, Mrs. M. P	94 to 98	6	23
Bequette, Daville	660	3	10
" "	632, 633	2	5
" "	626 to 631	3	9
" "	637	4	13
" "	635, 636	3	7
Berry and Place	634	3	8
Betts, W. M. & Bro	1340 to 1343	4	13
Blair, William	625	6	23
" "	284	2	5
Blaisdell, Mrs. C. W	1168, 1230	6	27

NAME.	NUMBER.	Division.	Class ....
Blatchly, Dr. A.	482	3	7
" "	1110	2	6
Boesch, Emil	1291	4	13
Bokee, Mrs. D. McK.	171, 172	6	27
" " "	784, 785	6	27
Bona, A.	422, 439	8	35
Bones, J. W.	1650	5	22
Bonner, Olpha, Jr.	1044	3	10
Boone, John L	1282	4	13
Bardwell, G. A.	9	5	22
Boston Cracker Bakery	1220	8	34
Bosworth, Mrs. A. G.	504	6	27
Boudin, Luis	424	4	13
Bowdich, Mrs. M. S.	1255	7	32
Bowen, James S.	1255	7	32
Boyd, T. C	3, 4, 5	6	23
Boyd, W. M.	412, 414	8	36
Boynton, A.	546	4	13
Bradley & Rulofson	815 to 817	6	26
Briggs & Haskell	857	8	35
Brignardello, Machiavello & Co	1263	8	34
Brignardello, Machiavello & Co	1264	5	22
Brittan, Holbrook & Co.	254, 255	4	13
" "	964, 952	4	13
" "	953, 763	4	13
Brittle, Chas. R.	1709	1	1
Broad, C. E.	1757	7	30
Brookes, S, M.	1105 to 1109	6	23
" "	454	6	23
Brooks, Aaron	1261	4	13
Brossa, Madame	805	7	32
Brown, B B.	90	4	13
Brown Bros. & Co.	76	4	17
Brown, Fred	397	6	27
Brown Valve Co.	590 to 592	2	5
Brush, Geo. A.	1183 to 1189	7	30
Brustgrum, Henrietta	709	6	27
Bryan, Thomas	494	6	23
Buckley, M. E.	589	6	27
Buckingham & Hecht	1246	3	11
" "	1244	4	16
Buckman, E. T.	965	4	16
Bugbey, B. N.	985	8	35
Burnett, Mrs. O. B. C.	714	7	32
Burner, H.	393	7	30
Burns, H. J.	794	6	23
Burns, John	763	4	14
Burr, A.	7, 8	6	23
Burr, Chas. H.	703	7	32
Burton Bottling Co.	1191	8	35
Bush & McAllister	707	3	12
Butler, Mrs. A.	700, 105-6	7	32
Butler, F. W.	1288, 1304	4	14
Butler, Theodore	1300	6	23
Butler, W. C.	49 to 51	6	26
" "	501, 502	6	23

C

California Beet Sugar Co.	1228	8	34
California Bleaching Soap Co.	1661	8	36
California Chemical Paint Co.	1273	8	36
California Cracker Co.	1081	8	34
California Powder Works	746	5	21
California Silk Culture Co.	1179	1	3
Calif'nia Wood Preserving Co	1270	1	1
Campbell, J	751	4	14
Cannon, D. J	1242	1	2
Carmen Island Salt Works	292	1	1
Carpenter, Mrs. M. D.	381, 382	6	27
Carr, William	857	5	22
Carroll, P.	877	6	24
Carter, George	1702	1	1
Casebolt, J. D. & Co.	398, 1369	4	14
" "	1370, 1371	4	14
Cassin, F. & P.	672, 673	8	35
Cedarbloom, Mrs. H. C.	13	7	32
Center & Bryant	681, 285	4	13
Chambers, Mrs. H.	578	7	32
Chamberlain, Mrs. E.	375	7	32
Chamberlain, Mrs. R. M.	1182	1	1
Chapman, Mrs. C.M	1253, 1254	6	27
Chenery, Souther & Co.	1265	8	35
Church, Mrs. E.	131	6	27
City Paving Co.	1269	5	22
Clarke, F. W.	1012	4	13
Clark, G. W.	858 to 860	4	19
" "	1243	4	19
Cowan, E.	1227	3	7
Code, P. D.	1271	8	34
Coffin, A.	425	6	23
Coghill, Lyons & Co.	906 to 908	8	34
Coit, Howard	665	4	14
Coleman, C. C.	214	3	7
Coleman, C. E.	415, 214	3	11
Cook, Mrs. A. O.	783	6	27
" "	827 to 830	6	27
Cook, Mrs. C.	1784	6	27
Cook, M. M. & Son	1738	4	16
Cooley & Green.	434	4	14
Coolidge, Miss A.	129	7	32
Coolidge, Mr. M. E.	128	7	32
Coon, N. S.	395 to 396	8	36
Cordes, Mrs. Anna	517 to 519	7	32
Cotter, Mrs.	839 to 844	6	27
" "	855, 856	6	27
Cowles, Mrs. G. W. M.	1602	7	32
Craig, O. W.	870	8	35
Craig, Miss Sarah	730	6	27
Craig & Savage	1447	4	13
Crane, Dr.	869	8	35
Crane & Cording.	1099	8	36
Crane & Curtis.	1439	6	26
Crocker, E. B.	802, 803	6	23
Crocker, G. D.	151	3	7
Cronise, W. H. V.	1666 to 1667	1	1
Cryer, Miss E. J.	435	7	32
Cubery & Co.	600, 767-68	7	28
" "	822, 823	7	28
Cullen, Thomas	706	5	21
Cullins, Benjamin	490	4	14
Culver, J. H.	1331	3	9
Currier & Winter	809, 810	6	26
Curry, N	491	5	21
Curtaz, B.	1069	7	31

D

Daniels, John & Co.	989	5	22
Darling, Frank H.	452, 453	6	23
Davidson & Co.	1713	7	32
Davidson, Rachel	1251	6	27
Davis, Amos.	474	3	10
Davis, A. G.	299	6	25
Davis, Stephen	44	1	3
Davisson, J. C.	256 to 258	8	33
Day, Miss Ellen	66	6	23
D'Echatrette, Mrs. V.	873	6	27
" "	875	7	31
DeFossey, Mr. and Mrs.	1040, 1041	6	23
DeGear, F.	430	3	10
De la Montanya, J.	259, 260	4	13

NAME.	NUMBER.	Division.	Class ....
DeYoung, Madame	1742	8	36
Deacon, William	643	2	5
Deck, Miss	821	7	32
Denison, C. H	1148	7	32
Dennis, S. G	675	7	31
Denny, J. G	922 to 925	6	23
Dewey & Co	1095	4	13
" "	1094	8	34
Dickie, G. W	747	5	20
Dieren, Mrs. B	503	7	32
Dietel & Beck	708	4	16
Dietrich, W. K	1090	8	34
Diez Bros	879	1	2
Dirrias, Miss F	731	7	32
Dixon, Joseph, Crucible Co	664	7	29
" " "	661	8	33
" " "	662, 663	8	36
Dodge, S. K	1161	4	16
Doherty, Mrs. M. E	1366 to 1368	6	27
" "	1367	8	36
Domingos	864	5	21
Donohue, Mrs. J	63	7	32
Doyle, Miss Ida V	1256, 1257	6	23
Dreise, R	1287	7	28
Dresel & Co	1113 to 1117	8	35
Drogge, T. P	1674	1	1
Dryden, Eliza M	617	7	32
Dwyer, J. P	460	7	28

E

Eastman, Emily R	845 to 852	6	26
" "	1146	6	26
Eaton, C. S	721, 722	7	31
"	1457	7	31
Eberhart & Lachman	1744	8	35
" "	1837	8	35
Edouart & Cobb	301 to 348	6	26
" "	234, 235	6	26
Edwards, Frank G	1338	3	11
" "	1337	4	19
Eisenberg, A. S	1698	1	1
Electrical Const. and Maintenance Company	792	3	12
Ellsworth & Washburn	738	4	13
" "	737	4	14
Elmquist, E. F	88	5	22
Ely, O. C	1734	3	10
Epstein, H	422	8	35
Erlin, G	1004	4	14
Erzgraber & Goetjen	278, 279	8	34
" "	281, 283	8	34
" "	280	8	35
Eureka Match Company	429	8	36

F

Fagerstein, G	391	6	23
Falkingham & Sherwood	904	4	14
Farcoit, Charles O	928, 929	3	8
Faulkner, D. A	1005	3	8
Favor, Mrs. C. O	103, 104	7	32
Feigenbaum & Co	1200, 1289	4	14
" "	492, 493	4	14
" "	1199	4	14
Fenderich, C	1144	6	23
Field, W. A	116	3	10
"	116	5	22
Figel, Eddy	237	7	28
Figel, Joseph	1056	4	17
Figel, S	1070	4	17
Figer Bros	758	4	14
Finch, J. S	694	1	2
Finke, A	1173	8	35
Fish, A. L	485	3	7
Fisher, L. P	757	7	28
Folger, Mrs. S. G	1215	6	27
Flattery, Dr. J	755	7	28
Ford, Wm. H	705	4	14
Forma, Charles	1693	1	1
Foster, C. H	24, 33	5	22
Fowler, Mrs. J. T	1167	7	32
Fowler, J. W	505	7	30
Fox, S. E	520	6	27
Francis, G	408	5	22
Francis, Smith & Co	1068	4	13
Franklin, Miss Gussie	616	6	27
French, Miss Nellie	1248	6	27
Freud, M	638, 639	7	32
Friedhofer, Augustus	1268	4	14
Friedhofer, Paul	1266, 1267		44
Friedlander & Co	283	4	17
Friedlander, I. & Co	1175	7	32
Friel, Wm	970	4	13
Frisbie, J. B	868	8	35
Fugazi, J. F	813, 814	8	36
Fulda, M. & Sons	1309	4	14
Fuller	109	2	6
Fuller, Geo. A	108	4	14
Fuller, Geo, F	362	7	30

G

Gabbs, Miss P. V	1121	7	32
Galloway, Mrs. J D	86	6	27
Galpen, Edward & Co	1414	4	16
Gardner, Mrs. J. J	620, 621	6	27
Garratt, W. T	1060	2	5
Gautier, L. M	669, 670	8	36
Gerberding, A	43	4	18
Gentile, Charles	1705	1	1
" "	1014 to 1022	4	17
Gerema, Mrs. J	1169	6	27
Gerema, Charles	1102 to 1104	6	23
Gerrish, Mrs. M. E	1223	6	23
" "	1227 to 1229	6	23
" "	1164	6	27
Gerzabeck, O. V	1499, 1500	4	13
Getz, Madame A	1204 to 1208	6	27
" "	1212, 1213	6	27
" "	1373, 1374	6	27
" "	918 to 921	6	27
" "	750	6	27
" "	1372	7	32
Ghirardelli, D	1349	8	34
Gibbons, Miss W	25	7	32
Gilbert, C. G	988	1	3
Gillespie, J. P	760	3	12
Gilmore, J. H	723	3	7
" "	1670	1	1
Godchaux, F	402	6	23
Goldman, Joseph	880, 881, 882	3	7
Goldstein, S. A	1170	4	19
Goldstein, W	407	8	36
Golly, August	1828	2	5
Goodenow, Mrs. Geo. V	142	7	32
Goodman, Mrs. R	29, 30	7	32
Goodwin & Co	1350 to 1365	4	14
Gould, A. S. & Son	1687	1	1
Gracier & Johnson	1042	3	7
Graham, Miss M. J	573	7	32
Grant, Mrs. Mary	17, 18	6	27
Gray, Miss Fanny E	1346, 1347	6	27

NAME.	NUMBER.	Division.	Class ....
Gray, Miss Fanny E	1345	7	32
Green, Charles	1694	1	1
" "	1023 to 1039	6	26
Groat, E	35	3	10
Gruber, F	239	1	3
Grunnagle, Jacob	1	6	23
Guernn, R. H	298	1	3
Guion, G. W	1052 to 1054	4	13
Gump, S. & G	1195	4	15
Guthrie, Mrs. Jane	147	7	32
Gutta Percha Manufact'g Co.	603	4	16
H			
Haas, George & Co	1001	8	34
Hall, M. E. C	622	4	14
Hallidie, A. S	536	2	6
" "	587	2	6
" "	1238	4	13
" "	87	5	22
Hall & Lachman	1049	4	19
Hammill, F. J	1441	4	13
Hanks, H. G	47	..	..
Hanlon, Teresa A	787	7	28
Hardy, Miss M	514, 515	6	23
Harrack, John	1708	1	1
Harris & Leveridge	1703	1	1
Hart, A	52 to 61, 895	6	23
Hartley, James & Co	776	1	3
Hartman, Mrs. E	893	7	32
Hartshorn & McPhun	749	4	19
Hatch, James	1476	4	14
Hatch, F. A	1315, 1316	8	34
Hawkins, William	1217	8	35
Hawley & Co	89 to 93	3	10
" "	691, 692	3	10
" "	1073	3	10
Hawley, M. C. & Co	123 to 126	3	10
" " "	286 to 288	..	..
" " "	641	3	10
" " "	674	3	10
Havell, A. H	941 to 948	7	31
Haynes & Lawton	1793	6	25
Hazeltine, A. A	754	1	3
Heald's Business College	550 to 559	3	12
" " "	521 to 532	7	28
Henderson, Miss M	1781	6	26
Henderson & Clark	1236	4	14
Hendrie, W. C	1686	1	1
Herzog, G. & Co	699	1	2
Heverin, M	980 to 982	6	24
Higby, Mrs. Wm	132	6	23
Higgins, E	1744	3	10
Hill, Thomas	1283, 1284	5	21
Hill & Knaugh	1319	3	10
Hinckley, C. E	759	8	36
Hirschfelder, S	449	7	28
Hodge, J. G	467 to 469	7	29
" "	729	7	29
Hoglen, George W	1071	3	10
Hollihan & Burbridge	439	4	19
Hoefer, H. G	496 to 498	6	23
" "	495	4	15
" "	499	4	19
Hooker, W. D	159, 160	3	7
" "	1003, 1303	3	7
Hope, Mrs D	31	7	32
Houghton, Mrs. C L	1221	6	27
Houseworth, Thomas	1488	6	26
Howell & Low	1249	3	10
Howes, E. K. & Co	426	3	10
" " "	426	4	14
Hughes, Miss Amy	594 to 599	6	27
Hughes, D. M	1122	3	12
Humburg, August	238	4	14
Hunt, E. O	1853	3	7
Huntington, F. A	963	3	10
Hurlburt, E. C	1258	4	13
" "	1093	4	14
Hurlburt, Mrs. E. C	1257	7	32
Hutchinson, D. S	568	3	12
Hutchinson, H. T	866	8	35
Hyatt, Miss Addie	776	7	32
Hynes, Mrs. A. R	1326	7	32
I			
Irelan, Mrs. W	569 to 583	6	23
J			
Jacquinot, Madame	82, 83, 836	6	27
Jameson, Rev. T. C	455 to 458	6	24
Janssen, J. H	1197, 1198	6	23
Jebens, George	427, 428	6	23
Jennings, J. T	478	6	27
Jessup, W. H	383	4	14
" "	384	7	28
Johnson, P	1072	3	9
Johnson, S	1059	3	10
Johnson, T. Rodgers	958	6	25
" " "	957, 960-61	7	32
" " "	959	5	21
Joiner, William	1240	4	16
Jones, Miss E	122	7	32
Jones & Western	1734	3	10
Joseph Bros	1006	4	17
Jung, J. C	101	8	33
Jungblut, August	1007	4	14
JAPANESE—NUMBERS.			
1558, 1559, 1560, 1561, 1563, 1565, 1516		1	1
1556, 1558, 1564, 1569, 1570, 1630		1	2
1557, 1563, 1604, 1605, 1606, 1620		1	3
1548		4	13
1504, 1546, 1550, 1562		4	14
1513 to 1545, 1550, 1556, 1558 to 1593, 1597		4	15
1600, 1601, 1627, 1632		4	15
1549, 1566, 1567, 1568, 1572, 1573, 1575		4	18
1576, 1577, 1578, 1580, 1629		4	18
1501, 1558, 1571		6	23
1505, 1636, 1637, 1640, 1641, 1623, 1626		6	24
1625, 1626, 1627, 1628		6	24
1574, 1582, 1583, 1584, 1585, 1607 to 1617		6	27
1502, 1503, 1550		7	29
1556		8	36
K			
Kahn, H	727	6	27
Kallschmidt, O	99, 886	6	23
" "	143 to 150	6	23
" "	200 to 208	6	23
" "	470	6	23
" "	887 to 889	6	26
Kast, F. X	940	4	16
Keane & O'Connor	1176	7	32
Keller, M. & Co	113	3	10
" "	112, 120	8	35
" "	121	8	35
Kelly, P	1259	4	16
Kennedy, J. E	276	5	20

NAME.	NUMBER.	Division.	Class ....
Kenney, Julia	64, 65	6	23
Kerlin, Mrs. L.	806	7	32
Kerr, J. A.	399	6	23
Kimball Manufacturing Co.	1792	3	10
" " "	1683	4	14
Kimball & Co.	1897	6	25
King, W. S.	363	1	2
Kittridge, Jonathan	291, 1096	4	13
Klain, N. M.	1375 to 1410	6	26
Knowlton, J. J.	139, 140	7	29
Knowlton & Co.	141	8	36
Kohler, Chase & Co.	941 to 948	7	31
Kohn, L.	1222	6	27
Kommer, Katie	892	7	32
Küner, A.	789	6	24
L			
Lake, Henry & Co.	890	8	36
Lalande, Miss A.	95	6	23
Lalande, Miss B.	94	6	23
Lamb, F. B.	688, 689	3	10
"	687	3	11
Lamb, Mrs. Geo.	188	8	35
Lambert, F.	34	5	22
Lancaster & Co.	914 to 916	4	17
Landsberger & Co.	1112	6	25
" "	861, 863	8	35
Landsberger, Sophie	736	7	32
Lane, M	1171, 1172	6	23
Larkins & Co.	780	4	14
Laswell, M. D.	1120	3	7
Law, Albert H.	1177	3	7
" "	1179	7	32
" "	1178	4	13
" "	1180	5	20
Lawton & Co.	1286	4	14
Lawton & Lennox	1484	3	10
Lea, H. E.	6	3	11
Le Clerc, B.	1076	4	13
Lehman, R.	742	8	34
Levy, A.	835	4	16
Liddle & Kaeding	771, 1475	5	21
Liebes & Co.	903, 972	4	17
"	1281	4	17
Litgenberg Bros.	1239	5	22
Linforth, Kellogg & Co.	951, 1472	3	7
" "	26	3	10
" "	696, 697	3	10
Lloyd, G. A.	1074	3	7
"	15	3	10
"	1075, 726	3	10
"	36, 37	4	13
"	1481	4	13
"	16, 37	5	32
Locan & Co	1464	7	32
Locke & Montague.	1097, 1100	4	13
" "	1301, 1302	4	13
Lord, W.	438	4	14
Lorquin, E.	1415 to 1434	1	3
Loryea, A. M.	289	8	36
Lubin & Goldstein	11	4	15
Lufkin & McGraw	1194	4	14
Lunny, J. W.	788	7	30
Luther, Dr. Henry A.	826	3	12
Lynde, Mrs. C. I.	1308	6	23
M			
Macfarlane, J. L.	1130, 1131	4	18
" "	1125, 1132	1	2
Macy, George C.	10	7	32
Magnus, P. A.	410	6	25
Main & Winchester	215 to 228	4	16
Makins, Mrs. A. H.	1209	7	32
Marden & Myrick	624	8	34
Marquies & Newsom	752	4	19
Marsh, Pilsbury & Co.	1796	2	5
Martenstein, J.	931	2	4
Martinache, Mrs. A. S	369	7	32
Mason's Brewery	1055	8	35
Mather, Mrs. S. H.	28	7	32
Matteson & Williamson	986	3	10
" "	1091	3	10
McDonald, J. K.	1256	3	10
McDonald, R. H. & Co.	724	8	35
" "	724	8	36
McDonald, William	45, 46	7	30
McElevy, W.	1673	1	1
McGrath, E.	725	6	24
McHenry, Mrs.	718	6	23
McKibben, William	740	4	13
McLenon, S. D.	1671	1	1
McMillan & Kester	682 to 686	8	35
Meanny, Mrs.	1162, 1163	6	27
Mencarini, D.	891	6	24
Merrill, Parker	411	3	11
Merrill & Samuels	1891	4	13
Mezzara, P.	232	6	24
Michner, R. H.	481	2	4
Middlemas, Mrs. George	448	7	32
Migliavacca	385	8	35
Miller, C. S.	1700	1	1
Miller, David D.	777, 778	4	14
" "	1224	4	14
Miners' Foundry	1452	2	5
Minturn, Mrs. E.	2	7	32
Mission and Pacific Woolen Mills	1133 to 1142	4	17
Mitchell & Co.	1119	4	13
Montez, L.	728	6	27
Moody, Mrs. J. H.	1224	6	27
Mooney, J H.	719	7	32
Mooney & Lloyd	1214	3	10
Moore, H. H.	67, 68	6	23
Morgan, Leo	1805	2	5
Morgan, Mrs. L. M.	744	7	32
Morris, Mrs. E.	950	7	32
Morse, G. D.	1653 to 1660	6	26
Mosgrove & Co.	793	4	17
Mosheimer & Stevenot	1646	8	36
Mubins, Ernst.	712, 713	5	22
Munns, John.	1250	4	16
Murray, H. W.	1676	1	1
N			
Nahl, C.	804	6	23
Nanns, F.	562	1	2
"	561	4	18
Narjot, E.	364 to 368	6	23
"	984	6	23
Nash, Miller & Co.	1045	3	10
Nelson & Doble	1334	3	8
" "	1332, 1333	4	13
Newbauer, Miss E.	1150	6	27
Newman, C.	779	4	15
Newman & Duval	537 to 539	4	15
Nichols, Miss S. A.	808	7	32
Norcross & Co.	462, 463	6	25
" "	464	7	32
Norton, G. A. & Co.	968	3	11
Nutting, Calvin & Son	252, 277	4	13

NAME.	NUMBER.	Division.	Class ....
O			
Oakland Cotton Mills	461, 990	4	18
Oakley's Mills	773	8	34
O'Neil, Thomas	1473, 1474	4	15
Ordway, R. J	1348	4	14
Ormsby, O. C	1677	1	1
Otto, Charles & Co	800	2	5
" "	404, 5, 6	4	13
P			
Pace, Charles	1089	3	12
Pacific Bridge Co	107	5	22
Pacific Business College	949	6	23
" " "	1050	3	12
" " "	1247	7	28
Pacific Glass Works	618, 619	4	15
Pacific Iron Works	1450	2	5
Pacific Neck-tie Factory	290	7	32
Pacific Oil and Lead Works	1787	8	36
Pacific Pneumatic Gas Co	1336	8	33
Pacific Pottery	240 to 244	4	15
Pacific Ramie Co	695	3	10
Pacific Rolling Mills Co	605 to 609	4	13
" " "	972 to 975	4	13
Pacific Saw Man'ing Co	999	3	9
" " "	1000, 271	4	13
Pacific Steam Works	1011	3	11
Pacific Stone Company	671	5	22
Pacific Straw Works	1010	7	32
Pacific Tannery	246 to 250	4	16
Pacific Wood Preserving Co	1270	5	22
Page & Crowell	1755, 1756	1	2
Painter & Calvert	932, 1896	8	36
Parkhurst, V. S. W	229, 230	3	12
" "	231	4	13
Palmer, W. J. T. & Co	1165	4	14
Park, Thomas B	1290	3	10
Pasquale, B	1041	6	25
"	1046	7	32
Patch, G. W	743	6	24
Paul, Miss Phebe	136, 137	7	32
Paullin, Mrs. S. F	585, 586	7	32
" "	1299	7	32
Payne, John	451	4	13
Peck, Miss O. M	1219	6	27
Perkins, W. L	702	4	19
Phelan, George E	819, 820	4	14
Philips, J. N	386	5	20
Phillips, P. J	838	4	13
Phipps, Miss Hattie	117	7	28
Phipps, Hattie	118, 119	6	23
Pilbeam, G. W	48	4	14
Pillsbury & Co	516	8	36
Pioche, F. L. A	642	2	5
Platt, S. H	623	5	22
Plummer, J. A	430	1	1
Pollard & Carvill	1232 to 1235	4	14
Pope, W. H	1063	3	10
Preble, C. S	80, 81	5	22
Preston, Mrs. R. J	584	7	32
Price, M	1789	4	13
Price Press Co	658	3	10
Pritz, Miss E	133, 134	7	32
Provost, D. R	1080	8	35
Purdy, Samuel	1688	1	1
Putzer, Joseph	392	8	35
Q			
Quigley, John	1043	2	5
R			
Reed, Ira H	1672	1	1
Reed, Hoagland & Newsom	401	4	19
Regensburger, T	1252	6	27
Reilly, T. J	1704	1	1
Reis, Mrs. J. C	741	7	32
Reynolds, Miss A	877	7	32
Reynolds, W. R	1695	1	1
Richard & Darden	930	8	36
Risdon Iron Works	253	2	5
Roach, John	811, 812	3	12
"	1662, 1344	3	12
Roach & Formhals	1470	8	33
Roberts, Mrs. C. S	487	7	32
Roberts, Martin	761	4	14
Robinson, Mrs. R. I	500	5	27
Romer, Caspar	693	1	2
Rosenberg, A. A	450	7	31
Rosenbaum & Co	1758	4	15
Rosenblatt, S	720	7	32
Ross, John	14	1	2
Ross, Thomas	440	6	23
Ross, Dempster & Co	896, 898	8	34
" "	897, 898	8	35
Royer, H	1318	4	16
S			
Sanderson, G. K	1229	3	11
S. F. Boiler Casing Co	1451	2	4
San Francisco Gas Co	1241	8	36
San Francisco Glass Works	1051	3	11
" " "	1310, 1311	4	15
" " "	1312	4	15
San Francisco Plating Works	909, 910	6	25
Samuels, D	831	1	3
"	831	4	16
"	1202, 1203	7	32
Saunders, J. H	991 to 994	6	23
Sawyer & Son	1807, 1808	4	13
Sayward & Fonda	1307	1	1
Schaefer, Amelia	1174	7	32
Schaeffer, Walter & Co	762	8	25
Schleifer, F. & Co	871	8	35
Schmidt & Burkhardt	1277	4	14
Schmitt, Mrs	376 to 380	6	27
" "	475	6	27
Schmitt, George	370 to 374	5	22
Schumaker, Eliza	733	7	32
Seamans, J. M	1218	6	25
Selby, Thomas H. & Co	1324, 1325	4	13
Severance, Holt & Co	231	3	7
Shed, C. D	824, 825	6	23
Shelton, C. Y	1707	1	1
Sheplar & Co	1196	6	24
Shepherd & Russell	437	4	14
Sherman & Hyde	733 to 735	7	31
Shoenstein & Klein	1858	3	10
Shourds, G. W	786	6	26
Siebert, N	698	2	5
"	1305	2	5
Skinner & Bonnet	120	5	22
Sleeper, Mrs. E. R	349 to 356	6	23
Slocum, Ruth B	1118	4	19
Smith, David R	403	1	14
Snow, J. F. & Co	1153	8	36
Soule, E	1760, 1762	4	14
Spaulding, Mrs. George	1261	6	27
Spaulding, N, W	275	3	9
Spawn & Bryant	1313, 1314	4	13
Standard Soap Co	441	8	36

NAME.	NUMBER.	Division.	Class ....
Stearns, W. H.	483, 484	8	34
Steele, J. G. & Co.	431, 432	8	36
Stoddart, David	611	2	5
" "	610	3	7
Stott, J.	666	4	13
Strahle, Jacob & Co.	1492 to 1497	4	14
Strong, Col. J. M.	1730	1	2
Stuart, C. V.	865	8	35
Sullivan, Mrs. J.	1048	7	32
Suplee, A. H.	680	3	11
Suydam, Mrs. M. A.	1440	3	12
Swain, R. A	790	6	24
Swan Brewery	1275	8	35
Swan, Duncan & Co.	1085	4	14
Sweatt, Le Roy A.	1330	4	13
Swett, Wm.	978	4	13
Swingle, Alfred	1321	5	21
Syme, James	38 to 42	6	23
T			
Taber, J. W.	149	6	25
Taber & Cunningham	466, 1322	4	14
Tay, Brooks & Backus	1764 to 1780	4	13
Taylor, F. B. & Co.	1715 to 1717	8	36
Taylor, John & Co.	659	8	33
Taylor, Dr. L. W.	300	8	36
Taylor & Co.	1718, 1720	4	13
" "	166 to 170	4	18
Taylor & Hallett	614, 615	8	35
Thaler, Conrad	717	8	34
Thomas, Miss Julia	756	7	32
Thompson, Miss C.	165	6	27
Thompson, George C.	1652	8	36
" "	1651	4	13
Thompson, D. J.	1086, 1087	8	35
Thompson, J. M.	261 to 264	3	7
Thomson, Mrs. R.	62	6	27
Thurnauer & Zinn	912, 913	4	14
" "	911	7	32
Tidd, Miss Martha	236	6	23
Tojetti, D.	69 to 67	6	23
Tomsky, L.	1155	7	30
Tooth, R. & F. & Co.	22	1	2
" " "	23	6	26
" " "	20	8	34
" " "	19, 21	8	35
Touaillon, J.	1226	5	22
Townsend, L. R.	233	5	22
Tracy, J. M.	163, 164	6	23
Travis & Wagner	472, 473	3	10
" " "	471	5	22
Truebody, Mrs. J.	894	7	32
Truworthy, F. M.	1152	6	24
Tubbs & Co.	245	4	18
Turnbull, B. C.	152 to 156	6	23
Turner, W. B.	534	7	28
Tustin, W. I.	1082	2	5
" "	1083	2	6
V			
Vanderleith, E.	32	7	32
Vanderslice, W. K. & Co.	711	6	25
Van Deursen, Mrs. Anna	361	7	32
Van Winkle, Miss Ada	542 to 545	6	23
Van Winkle, Miss A. D.	540, 541	6	23
Vasconcelles, J. J.	1274	4	13
Villegia & Slotterbeck	293 to 297	5	21
Von Detten, C.	1772	8	35
W			
Wackenheimer, Miss J.	560		
Walker, Miss E. C.	745, 1181	7	32
Washburn, C. F.	115	7	32
Watkins, C. E.	1663 to 1665	8	36
Watson, Mrs. E. H.	917	6	26
Webster, Mrs. C. F.	102	7	32
Weed & Kingwell	939	7	32
Weeks, S. F. & Co.	927	4	13
Weichart & Freese	1453 to 1455	1	2
Weichart, J.	1339	4	14
Weister & Co.	1079	4	13
"	676	3	9
"	1077, 1078	3	10
West Bros.	1193	3	10
Westley, Thornton	1292 to 1298	8	35
Wheaton, Thomas	459	4	14
Whipple, Miss E.	710	3	10
White, Henry	443	7	32
"	444 to 446	6	27
Whiting, Miss Hattie	774, 775	6	23
Whiting & Murbur	977	6	27
Wiggett, H.	1047	4	13
Wilcox, Allen	1790	8	35
Wilcox & Gibbs	701, 1143	3	7
Wildman & Co.	567	3	11
Will & Finck	1009	4	16
Williams, Mrs. H. A.	801	4	13
Wilson, Mrs. A. E.	796, 797	7	32
Wilson, Miss Minnie	798	6	23
Wing & Brown	1647	6	27
Winter, D. & H. A.	667	4	14
Winter, Maurer & Co.	677, 679	3	10
Wolf, A	640	8	36
Wolfe, J. E. & Son	969	3	9
Womens' Co-operative Union	593	5	22
Wonser, Mrs.	1125	7	32
Wood, George M.	1101	6	27
Woodbury, Mrs. C. E.	791	6	24
Wright, John	1335	6	27
		4	13
Y			
Yates & Co.	1002		
Young, John W.	1680	4	13
		1	2
Z			
Zech, Jacob	479 to 480	7	31

REPORT ON CASH PREMIUMS.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—The Committee on Cash Premiums beg leave to submit the following report:

WILLIAM GOUVERNEUR MORRIS and H. C. BENNETT. For Essay on The Manufacturing Interests of California, award of Cash Premium of $400.

DAVID R. SMITH. For Essay on Transmitting Ores, awarded Cash Premium of $100.

SOLOMON W. JEWETT. For Essay on the Culture of Cotton in California, awarded Cash Premium of $100.

DR. MACGOWAN. For Essays on Insect Wax, Grass Cloth, Artificial Manufacture of Pearls, Feather Work, and Vegetable Tallow, all of China, awarded Cash Premium of $200.

A. J. BIGELOW. For Essay on a System for Reclaiming Overflowed and Tide Land, awarded $100.

Your Committee reject the Essay on Overflowed and Tide Lands, because it is a descriptive Geography of the Tide Lands instead of the best method of reclaiming said lands; hence not coming under the class for which it was intended.

The report on tides was rejected because it was an Essay on the cause of Tides, instead of an Essay on the Tides of San Francisco Bay, and the results of building piers and wharves.

No other Essays were presented for our consideration, notwithstanding the valuable awards offered.

Your Committee awarded a cash premium to Dr. Macgowan for five Essays on various products of China for two reasons—first, the merit of the productions, and, secondly, to encourage contributions from China and Japan in the future.

HENRY L. DAVIS.
A. S. HALLIDIE.

IRVING M. SCOTT, Secretary.

AN ESSAY

ON

THE MANUFACTURING INTERESTS

OF CALIFORNIA,

THE CAUSES

THAT IMPEDE AND THOSE THAT WOULD AID

THEIR DEVELOPMENT.

BY

WM. GOUVERNEUR MORRIS, U. S. MARSHAL,

AND

H. C. BENNETT.

CONTENTS.

For the purpose of keeping each Division of the main subject of this Essay separate and distinct, and for convenience of reference, its contents have been arranged under the following heads:

1. Introduction.
2. Importance of Manufactures.
3. Progress of Manufactures in California.
4. Their Present Condition.
5. Table and List of all the Manufactures in the State.
6. Population of the State by Counties.
7. Imports and Exports of Manufactured Goods.
8. Imports and Exports of General Merchandise.
9. Tables showing Actual and Assessed Value of Property in the State by Counties.
10. Tables showing Exports of Treasure and Merchandise from 1848 to 1871.
11. Causes which Operate Against the Manufacturing Interests.
12. Consumption of the Precious Metals in Local Manufactures.
13. Costs of a Metallic Currency.
14. Influence of the Rate of Interest on General Merchandise.
15. Influence of Savings Banks on Manufacturing Interests.
16. How the Rate of Interest on Capital controls the Manufacturing Interests.
17. Price of Labor and Board in each County in the State.
18. Effects of Inequality of Taxation; Rate of Taxes in each County.
19. The Relations between Capital and Labor.
20. The Influence of the Tariff on Manufacturing Interests.
21. Remedies Proposed for Existing Evils.
22. Conclusion.

AN ESSAY

ON

THE MANUFACTURING INTERESTS

OF THE

STATE OF CALIFORNIA.

THE questions involved in an Essay on such important subjects as the Manufacturing Interests, the causes which impede and those that would aid the development of these interests, in such a State as California, embrace most of the primal and complex problems in Political Economy, Finance, Trade and Commerce.

To state all that might and should be stated on each of such very grave questions, in order to make such an Essay really valuable, would swell its proportions beyond reasonable limits; but it is imperatively necessary, to render any opinion on a subject involving these questions useful, to refer to the influence the laws of Trade exert over the industrial resources of every community.

THE IMPORTANCE OF MANUFACTURES.

In the present condition of the civilized world, with the barriers of Time and Distance removed by the Telegraph and Railway, the community that neglects its manufacturing interests becomes tributary to its more prudent cotemporaries, and is compelled to promote their advancement at its own expense.

In the age in which we live, Art and Science are the powerful, willing handmaids of Manufactures, wherever the latter are liberally encouraged. Neither of the former can sustain a vigorous existence in communities where the latter are neglected.

The present unsatisfactory condition of the manufacturing interests of California affords a very forcible illustration of one of the laws of Trade, that, no matter how varied or valuable the natural resources of a country, its people cannot keep pace with the progress of the world if these natural resources be exported as raw materials to sustain the manufactures of other countries.

Manufactures are essential for the employment of the skill, capital and enterprise of the most energetic and useful elements of the population. That community is most prosperous which most effectually and profitably employs its supply of labor, because, labor being the source of wealth, the greater the the source, the greater will be the stream flowing therefrom.

Whenever one half of the labor elements of a community is left unemployed, the half that finds employment must sustain the whole, either at home, or as criminals and paupers.

The wages of labor employed in the production of raw materials are never as high as those paid in manufacturing. As the wages for labor sustain the home trade, the larger the former the more active will be the latter; hence the advantage every branch of business gains in communities where manufactures are active, as compared with those that export their products in an unmanufactured condition.

If the above extremely simple and self-evident principles of Political Economy be correct, then the people of California flagrantly violate them, and the stagnation that pervades every branch of business is but part of the penalty they must pay for so doing. One of the most painfully suggestive facts developed by the statistics of manufactures in this State is shown in the very few boys and women employed. Of the former only about 500, and of the latter not more than 300 are engaged in manufactures in the whole State. There are, at a very low estimate, 40,000 women and 20,000 boys in California, whose services are available for manufactures. The value of this immense force of labor is lost to the State for want of means for its employment. Estimating the services of the women at $12 per month, and of the boys at $10 per month, the aggregate loss exceeds $8,000,000 annually in actual cash value, besides the more serious loss, which cannot be estimated in dollars and cents, of the rising generation growing up in a condition of forced idleness.

In a State like California, covering an area larger than half a dozen of the New England States, containing millions of acres of land known to be adapted for almost every description of tillage, and blessed with a climate peculiarly congenial to both animal and vegetable life, were its population as many millions as it is thousands at present, there would never be reason to fear the presence of gaunt Famine. All the necessaries and most of the luxuries of life, capable of production from the soil, from waters teeming with an almost endless variety of fish, and herds that find rich pastures on a thousand hills, will ever furnish her people with abundance of food.

Were it "all of life to live," the people of California would be the most fortunate in the world in possessing such ample provision to sustain life. Nor are their resources restricted to the products of the soil, the waters and the herds. The product of their mines, of the precious metals, has been so enormous and so potent in influence as to materially change the conduct of the trade and commerce of the world.

So potent for good has been the immense bullion product of California, that it has enabled the working classes in every civilized country to make greater strides in political, social and moral progress, during the twenty years following the discovery of this source of the world's wealth, than they had made during the preceding twenty centuries.

In addition to such immense resources of food and wealth, California possesses unequalled facilities for Commerce, Trade and Manufactures. She has navigable rivers penetrating hundreds of miles into the interior, through valleys and plains dotted with farms, orchards, vineyards, and rich pastures on which feed thousands of fine-wooled sheep and cattle. She has unlimited water-power, forests of excellent timber, iron and copper ores, marble and materials for carrying on most of the manufactures that flourish in other sections of the Republic, and a peculiarly energetic, intelligent and skillful working population. With Asia, Australia, Mexico, Central America and the Sandwich Islands connected by well-appointed lines of steamers, and the myriad peoples of these countries recognizing the advantage of our geographical position as a centre for trade—obtaining from distant countries, through our agency, the goods we could make here and send them direct, it must be evident to the most thoughtless that sinister influences exist in our midst, or manufacturing industries would not languish in a country so highly favored in resources, location and people.

The purpose of this brief Essay is to exhibit in plain, unvarnished colors, some of these influences, in the earnest hope of attracting general attention to subjects involving the vital interests of the State.

THE PROGRESS OF MANUFACTURES IN CALIFORNIA.

Prior to 1860, the manufacturing interests of this State were of the most insignificant proportions. Almost every article used was imported from the Atlantic States or Europe. The evil effects of such a policy about that time began to attract the attention of a few far-seeing mechanics, through whose influence the Legislature, in 1863, were induced to offer premiums, amounting to several thousand dollars, to encourage the manufacture of Paper, Glass, Boots and Shoes, Woolen Goods and several other articles. The cry of "patronize home manufactures" became very popular; but home manufactures could not thrive on their popularity, and they have never taken a hearty hold of the soil.

As a proof of the progress they made from 1863 to 1865, attention is called to the returns of the Internal Revenue for 1865, in San Francisco District, which at that time contained nearly all the manufactures in the State. This revenue, collected from every class of manufactures and ranging from 2 to 5 per cent. on the value of their products, amounted to only $276,381 for the entire year.

THE PRESENT CONDITION OF THE MANUFACTURING INTERESTS.

The following table, compiled from the returns of the United States Census for 1870, and from other reliable sources, exhibits the number of "establishments of productive industry," in each county, the number and classes of persons employed therein, the capital invested, wages paid for labor, cost of materials and value of products:

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Number of Establishments	HANDS EMPLOYED			Capital Invested	Wages Paid	Cost of Materials	Value of Products
		Men	Women	Boys				
Alameda	150	714	16	14	$ 775,350	$ 355,390	$ 577,916	$ 1,438,414
Alpine	13	21	2	3	74,575	9,935	6,393	36,752
Amador	201	1,154	.....	2	1,976,205	591,945	420,738	1,862,957
Butte	95	653	.....	2	984,200	375,180	608,187	1,319,552
Calaveras	615	1,614	.....	3	1,025,950	670,302	366,313	1,775,256
Colusa	28	57	.....	2	53,200	38,024	117,389	179,294
Contra Costa	48	429	.....	3	3,554,240	436,497	99,127	978,735
Del Norte	54	157	.....	....	167,000	59,215	64,200	262,800
El Dorado	156	613	2	1	299,059	168,730	255,974	654,681
Fresno	19	390	1	1	429,450	298,300	19,590	471,800
Humboldt	47	354	4	13	666,150	178,425	460,365	929,278
Inyo	43	186	.....	1	335,820	100,775	194,440	583,465
Kern	31	172	.....	1	250,500	50,550	38,159	133,683
Klamath	22	196	.....	2	140,300	107,950	38,709	288,819
Lake	29	278	.....	5	578,255	144,335	24,100	245,440
Lassen	16	21	.....	1	23,100	3,725	25,100	45,850
Los Angeles	99	654	.....	5	685,640	211,782	337,029	781,646
Marin	41	477	.....	3	242,300	97,200	151,698	366,546
Mariposa	44	422	.....	4	1,865,860	284,865	301,539	843,890
Mendocino	118	1,191	2	....	1,240,630	494,162	458,012	1,345,100
Merced	15	24	1	2	51,850	9,500	34,678	61,830
Mono	15	45	.....	1	36,850	17,050	44,248	145,560
Monterey	52	156	.....	7	165,300	39,305	162,704	332,312
Napa	43	99	.....	2	393,250	155,890	166,263	394,600
Nevada	219	1,631	3	6	2,795,815	863,822	842,984	3,056,991
Placer	148	923	.....	5	823,895	470,130	347,892	1,165,271
Plumas	116	601	.....	1	591,775	289,855	109,452	603,182
Sacramento	177	1,444	14	46	1,750,854	1,069,029	1,612,692	3,640,406
San Bernardino	29	119	1	4	102,775	36,700	92,148	201,010
San Diego	25	62	2	3	96,900	18,150	95,680	140,875
San Francisco	1,792	13,630	1,036	580	25,654,767	8,118,057	23,153,277	49,621,348
San Joaquin	157	482	2	12	670,975	365,629	905,909	1,617,918
San Luis Obispo	20	48	.....	2	58,550	40,280	37,430	108,564
San Mateo	84	350	2	2	315,790	131,523	183,971	472,633
Santa Barbara	41	166	37	5	340,300	40,860	52,538	158,422
Santa Clara	172	1,103	6	41	15,469,550	707,410	1,220,748	2,270,020
Santa Cruz	142	1,101	3	4	2,242,475	474,460	843,389	1,956,994
Shasta	68	207	.....	2	194,675	72,798	76,515	238,186
Sierra	110	1,006	.....	4	798,785	594,906	608,658	1,320,751
Siskiyou	104	284	.....	3	274,600	67,769	147,719	403,006
Solano	179	337	13	4	534,000	125,575	414,430	822,342
Sonoma	236	935	41	3	839,180	367,482	668,755	1,453,718
Stanislaus	30	54	.....	1	222,050	23,200	146,990	234,559
Sutter	24	32	.....	2	30,400	9,000	10,360	34,500
Tehama	44	145	52	2	174,620	109,550	566,080	752,080
Trinity	67	215	.....	2	217,200	79,230	68,886	244,900
Tulare	325	69	.....	3	68,950	21,100	75,296	157,700
Tuolumne	702	678	2	1	891,670	315,675	231,215	703,950
Yolo	102	290	7	6	251,425	125,957	340,908	683,306
Yuba	108	637	4	8	1,520,300	427,334	750,144	1,736,048
Totals	6,515	36,626	1,253	830	$76,947,310	$19,874,513	$38,597,037	$89,276,949

No. I.—(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Agricultural Implement Makers	Animal Charcoal Burners	Asphaltum Miners	Assayers	Axle Grease Makers	Bag Weavers	Bagging Weavers	Bakers	Bark Cutters	Basket Makers	Bell Founders	Bellows Makers	Billiard-ball Makers	Billiard-table Makers	Blacksmiths	Boat Builders	Boiler Makers	Book Binders	Boot and Shoemakers	Borax Maker
1						1								24				20	
														2				1	
														14				13	
							1							10				9	
							5							26				13	
														9				5	
														13				8	
														4				9	
							1							11				7	
														4				5	
							1							5				3	
														5				6	
														4				9	
														4				4	
														7				2	1
														4				3	
							1							6				11	
														2				3	
														8				6	
														13				9	
														4				2	
														1				2	
							1							9				3	
														8				8	
							5							12				16	
														15				17	
														6				3	
					2		2						1	28		1	2	18	
														4				3	
														4				4	
	1		2	1	4		39		2	1	1	1	5	28	6	3	7	164	
2														50		1		15	
														3				5	
														15				11	
		1												4				4	
														21				23	
								4						4				4	
														9				4	
														5				9	
														9				7	
							4							16				11	
1							1							29				19	
														9				5	
														5				8	
														8				6	
														7				3	
														3				5	
														13				12	
							1							35				11	
					1		3							22				15	
4	1	1	2	2	7	1	64	4	2	1	1	1	6	561	6	5	9	463	1

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Box Makers	Brass Founders	Brewers	Broom Makers	Brick Makers	Brush Makers	Builders	Cabinet Makers	Candle Makers	Candy Makers	Cap Makers	Carpenters	Carriage Makers	Carriage Painters	Carriage Trimmers
Alameda				1			1	2				22		1	
Alpine												2			
Amador			3	1								4			
Butte	1		2									6			
Calaveras			6									38			
Colusa												2			
Contra Costa												4			
Del Norte			1					1				6			
El Dorado												4			
Fresno												5			
Humboldt					1							6			
Inyo												6			
Kern												7			
Klamath												3			
Lake												4			
Lassen												3			
Los Angeles			2		2							9	2		
Marin					11							5			
Mariposa			2									7			
Mendocino			4		1			1				10			
Merced												3			
Mono												2			
Monterey			1									9			
Napa												6			
Nevada			12		2			1		1		12			
Placer			4					2				12			1
Plumas												4			
Sacramento		1	5	1	5			6		4		20	4		
San Bernardino			1									4	2		
San Diego			1									3			
San Francisco	6	5	23	5	2	2	7	12	2	11	3	45	13	3	2
San Joaquin			3	1				2				23			
San Luis Obispo			1									3			
San Mateo			1					1				18			
Santa Barbara			2					3				4			
Santa Clara	1			1	3					1		10			
Santa Cruz			3									9			
Shasta			1									3			
Sierra												7			
Siskiyou			2									6			
Solano			3				2					7			
Sonoma			2		1			2		1		43			
Stanislaus												6			
Sutter												4			
Tehama												12			
Trinity			1									2			
Tulare												5			
Tuolumne												7			
Yolo				2	3			3				7			
Yuba				1	2		2	3				12			
Totals	8	6	86	13	33	2	12	39	2	18	3	463	21	4	3

No. I.—(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Carvers	Calkers	Cement Pipe Makers	Chair Maker	Champagne Maker	Charcoal Burner	Chemical Works	Chickory Maker	Chocolate Makers	Chlorination Works	Cigar Makers	Cigar-box Makers	Chrome Mines	Cloak Makers	Coal Miners	Coffee Grinders	Coopers	Copper Concentrators	Copper Mines	Coppersmiths
									1								2		
																1			
									1									1	
														5					
												1							
																1			
																1			
					1				1										
										6									
2	6	3	....	1	....	4	....	2	....	78	2	....	15	....	9	28	....	....	5
										1									
										2					1	2			
																2			
			1													5			
							1												
										2									
2	6	3	1	1	1	4	1	2	3	89	2	1	15	5	10	40	2	1	5

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Cordage Makers	Cordial Makers	Corkscrew Maker	Cracker Bakers	Cutlers	Dentists	Distillers	Dress Makers	Electro-platers	Electrotypers	Engravers	Feather Dresser	Firework Makers	Feed Mill	File Cutters
Alameda															
Alpine															
Amador							5								
Butte															
Calaveras						2	7								
Colusa															
Contra Costa															
Del Norte															
El Dorado															
Fresno															
Humboldt															
Inyo															
Kern															
Klamath															
Lake															
Lassen															
Los Angeles						2									
Marin															
Mariposa															
Mendocino															
Merced															
Mono															
Monterey															
Napa							3								
Nevada						1	1								
Placer															
Plumas															
Sacramento					2						1				
San Bernardino															
San Diego															
San Francisco	2	4	1	4	4	15	4	81	6	3	2	1	2	1	3
San Joaquin															
San Luis Obispo															
San Mateo															
Santa Barbara															
Santa Clara				1	1										
Santa Cruz															
Shasta															
Sierra															
Siskiyou		1													
Solano								2							
Sonoma						2	2								
Stanislaus															
Sutter															
Tehama															
Trinity															
Tulare															
Tuolumne															
Yolo						1	1								
Yuba						1	2								
Totals	2	5	1	5	7	24	25	83	6	3	3	1	2	1	3

No. I.—(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Fish Curers	Fishermen	Flavoring Extract Maker	Flour Mills	Flower (artificial) Maker	Fruit Preservers	Furriers	Gas Works	Gas Meter Maker	Giant Powder Makers	Ginger Beer Makers	Gilder	Glass Cutters	Glass Makers	Glass Painter	Glove Makers	Gold Cleaners	Gold Beaters	Gold Mining Companies	Gold Pen Maker
			5		1		1												
			2															113	
			4															22	
																		418	
			2																
			4																
	2		2															16	
			1															101	
			1																
3			2																
			1															11	
			2															3	
			1															4	
			2																
			1																
			5				1											1	
										1									
																		5	
			6																
			2																
			1															5	
			3																
			5																
			1				1											79	
																		101	
			1															79	
			3				1								1				
			1															1	
3	255	1	8	1	2	4	1	1	2	1	1	2	2	1	2	3	2		1
			5				1												
			2																
			2																
			2																
			8				1												
			6				1												
	1		2															28	
																		50	
			8															48	
	66		1												1				
			12				1								1				
			3																
			3												2				
			1															37	
			3															1	
			3															139	
1			4																
			5				1											35	
7	324	1	136	1	3	4	10	1	2	2	1	2	2	1	7	3	2	1297	1

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Glue Makers	Granite Quarriers	Gunsmiths	Harness Makers	Hatters	Hat Block Maker	Hoop Skirt Makers	Hydraulic Cement Maker	Hydraulic Hose Maker	Hydraulic Nozzle Maker	Hydraulic Pipe Maker	Ice Maker	India Rubber Stamp Makers	Indian Root Bitters Maker	Ink
Alameda				10											
Alpine															
Amador				3											
Butte				3											
Calaveras				1							1				
Colusa				1											
Contra Costa				8											
Del Norte															
El Dorado				1											
Fresno															
Humboldt				3											
Inyo															
Kern															
Klamath															
Lake				1											
Lassen															
Los Angeles				7											
Marin				2											
Mariposa				1											
Mendocino				6											
Merced				1											
Mono															
Monterey			1	3											
Napa				3											
Nevada			1	4					1	1			1		
Placer		3		2									1		
Plumas															
Sacramento		1		9											
San Bernardino				2											
San Diego				1											
San Francisco	2		5	33	12	1	3					1		1	1
San Joaquin				13											
San Luis Obispo				1											
San Mateo				6											
Santa Barbara				3											
Santa Clara			4	11											
Santa Cruz	1		1	5											
Shasta				3											
Sierra															
Siskiyou				1				1							
Solano				7					1						
Sonoma				11											
Stanislaus				2											
Sutter				3											
Tehama				6											
Trinity			1												
Tulare				1											
Tuolumne				3											
Yolo				9											
Yuba				9											
Totals	3	4	13	199	12	1	3	1	1	1	1	1	2	1	1

No. I.—(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Maltsters	Machine-shops and Foundries	Macaroni Makers	Lubricating Oil Maker	Lumberers	Locksmiths	Lithographers	Linseed Oil Maker	Lime Burners	Leather Hose and Belt Makers	Lead Smelters	Lead Pipe and Shot Maker	Last Maker	Ladies' Underclothing Makers	Ladies' Boot Makers	Jewel-box Makers	Jewelers	Ivory Turners	Iron Doors and Shutters Makers	Iron Bedstead Makers
	3															1			
	1																		
	1				1											1			
	1															1			
	1			3				3		4									
	2																		
	1			33															
	3							1								2		1	
	1																		
	3																		
	2			41	1			4								3			
	1																		
	1															1			
	2																		
	1															2			
	1																		
	1															1			
3	31	3	1	77	8	4	1	9	2	5	1	1	1	2	3	42	1	3	1

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Marble Sawing Mill	Marble Workers	Mathematical Instr'ment Makers	Match Makers	Mattress Makers	Meerschaum Pipe Maker	Metallurgical Works	Milliners	Millwrights	Musical Instrument Makers	Mustard Maker	Necktie Makers	Oil Clothing Makers	Oil Refiners	Pail and Tub Makers
Alameda	....	5	....	....	....	....	....	2	....	....	....	....	....	....	....
Alpine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Amador	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Butte	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Calaveras	....	1	....	....	....	....	....	....	5	....	....	....	....	....	....
Colusa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Contra Costa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Del Norte	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
El Dorado	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Fresno	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Humboldt	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Inyo	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Kern	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Klamath	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lake	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lassen	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Los Angeles	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Marin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mariposa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mendocino	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
Merced	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mono	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Monterey	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Napa	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Nevada	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....
Placer	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Plumas	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sacramento	....	1	....	1	1	....	....	....	....	....	....	....	....	....	1
San Bernardino	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
San Diego	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
San Francisco	....	21	2	4	5	1	3	22	....	2	1	2	3	2	1
San Joaquin	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....
San Luis Obispo	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
San Mateo	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Santa Barbara	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Santa Clara	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....
Santa Cruz	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Shasta	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sierra	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Siskiyou	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Solano	....	1	....	....	2	....	....	1	....	....	....	....	....	....	....
Sonoma	....	....	....	....	....	....	....	3	....	....	....	....	....	....	....
Stanislaus	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sutter	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tehama	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Trinity	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tulare	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tuolumne	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....
Yolo	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....
Yuba	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals	1	34	2	6	9	1	3	34	6	2	1	2	3	2	3

No. I —(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Painters	Paper Makers	Paper Box Makers	Paper Collar Maker	Patent Medicine Makers	Pattern Makers	Perfumery Maker	Petroleum Miners	Photographers	Pinaoforte Makers	Pickle Makers	Picture Frame Makers	Planing Mills	Plaster of Paris Maker	Plaster Ornament Maker	Plumbers and Gasfitters	Pork Packers	Potters	Powder Worker	Printers	
6												1			3				6	
																			2	
																			2	
								1				2							2	
								1											1	
																			1	
1								1											2	
																			1	
																			1	
																			2	
																			1	
																			1	
																			2	
																			1	
												1							3	
	1																		2	
																			2	
								1											2	
																			1	
																1	1		6	
								1											2	
2											1					1			3	
																1			2	
																			1	
4				1				1		1		1			4		1		8	
																			2	
												1							2	
27		4	1	3	9	1		14	2	4	7	4	1	2	22	8			72	
																			4	
																			2	
3												1							1	
							3												2	
1								2				2					1		8	
2	1											4						1	3	
																			1	
												1							2	
																			2	
3								2				1							4	
6								1							1		2		5	
																			1	
																			1	
																			2	
																			1	
																			2	
								2		1									1	
1								2				1							2	
																			2	
56	2	4	1	4	9	1	3	29	2	6	8	20	1	2	30	11	5	1	180	

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD—

COUNTIES.	Printers' Roller Maker	Pump Makers	Quicksilver Miners	Rag Carpet Maker	Rectifiers of Spirits	Refiner of Bullion	Regalia Makers	Riggers	Rolling Mill	Rudder Maker	Saddletree Makers	Safe Makers	Safety Fuse Makers	Sail Makers	Salt Makers
Alameda													1		7
Alpine															
Amador															
Butte															
Calaveras															
Colusa															
Contra Costa															
Del Norte															
El Dorado															
Fresno			1												
Humboldt															
Inyo															
Kern															
Klamath															
Lake			2												
Lassen															
Los Angeles					1										1
Marin															
Mariposa															
Mendocino															
Merced															
Mono															
Monterey															
Napa															
Nevada															
Placer															
Plumas															
Sacramento		1													
San Bernardino											2				
San Diego															
San Francisco	1	4		1	4	1	3	5	1	1		3		15	
San Joaquin															
San Luis Obispo															
San Mateo															
Santa Barbara															
Santa Clara			1												
Santa Cruz															
Shasta													1		
Sierra															
Siskiyou															
Solano															
Sonoma															
Stanislaus															
Sutter															
Tehama															
Trinity															
Tulare															
Tuolumne															
Yolo															
Yuba											2				
Totals	1	5	4	1	5	1	3	5	1	1	4	3	2	15	8

No. I —(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Salt Refiners	Saw Maker	Saw Mills	Sash, Door and Blind Makers	Screen Maker	Screw and Bolt Makers	Seal Cutters	Sea Otter Hunter	Sealing Wax Maker	Shingle Mills	Shingle Splitters	Shipwrights	Shirt Makers	Shoebinders	Ship Block Makers	Shrimp Catchers	Slipper Makers	Soap Makers	Soap-root Curlers	Silver Mining Companies
			2																
		3							1										1
		8																	
		16	1							1									
		7								1									
		2																	
		15																	
		13	1																
		2							1										
		5							2		5								
		2																	8
		4																	
		6																	
		4																	
		3																	
		2								15					11		1		
		1																	
		5																	
		16									7								
		3																	
		3																	
		20	2							2							1		
		24																1	
		13																	
		2	2																
		4							1										
		1																	
4	1	4	6	1	1	3		1			9	12	2	3		15	13	2	
			2								2								
		2																	
		12							4										
							1										1		
		2	1						1								1		
		21							3								1		
		11	1																
		33																	
		11							1										
			1																
		17	2						1										
		6																	
		13																	
		4																	
		8																	
			1																
		14							1								1		
4	1	336	22	1	1	3	1	1	16	19	23	12	2	3	11	15	19	3	9

TABLE

MANUFACTURES IN CALIFORNIA, ACCORD-

COUNTIES.	Soda Water Makers	Slate Quarries	Shop Clothing Makers	Soda (carbonate) Maker	Sorghum Syrup Maker	Spiral Spring Maker	Stone Cutters	Stone Quarriers	Starch Maker	Stair Builders	Straw Hat Makers	Stone (artificial) Maker	Stencil Plate Cutters	Sulphuret Roasters	Sugar Refiners
Alameda								2							
Alpine															
Amador															
Butte															
Calaveras	1	1					3								
Colusa															
Contra Costa															
Del Norte															
El Dorado															
Fresno															
Humboldt															
Inyo															
Kern															
Klamath															
Lake															
Lassen															
Los Angeles															
Marin															
Mariposa															
Mendocino															
Merced															
Mono															
Monterey					1										
Napa															
Nevada	2													3	
Placer															
Plumas															
Sacramento	1														
San Bernardino															
San Diego															
San Francisco	7		3	1		1	4		1	8	2	1	4		2
San Joaquin															
San Luis Obispo															
San Mateo															
Santa Barbara															
Santa Clara															
Santa Cruz															
Shasta															
Sierra															
Siskiyou															
Solano	2														
Sonoma	1														
Stanislaus															
Sutter															
Tehama															
Trinity															
Tulare															
Tuolumne															
Yolo															
Yuba	1														
Totals	15	1	3	1	1	1	7	2	1	8	2	4	1	3	2

No. I.—(Continued.)

ING TO THE FEDERAL CENSUS OF 1870.

Tallow Melter	Tailors	Tanners	Telegraph Instrument Maker	Tinsmiths	Tobacco Cutters	Tobacco Maker	Tool Makers	Trunk Makers	Truss Makers	Turners	Type Founders	Undertakers	Umbrella Makers	Upholsterers	Vinegar Makers	Wadding Maker	Washing Machine Makers	Washing Powder Maker	Watch Makers
	1			11													1		
				1															
				4															
		1		3															
	2			1															
		1		3															
		1		2															
		1		1															
	2																		
		1		4															
				1															
				1															
				3															
		1		3															
				2															
	1	1		1															
	1	1		1															
	1																		
				4															
				1															
	3	1		6								1		1					
				1															
				2															
	9			5								2							
				1	1					1									
				1															
1	48	17	1	28	1		5	13	3	4	3	11	3	4	2	1	1	1	9
	2	1		3															
				1															
	1	1		4															
				2															
	9	4		5		1						2		1					
		5		3															
				1															
				1															
	5	3		5															
	5	4		7								1							
				1															
	1			2															
	3			4															
	5	1		5								1							
1	99	45	1	135	2	1	5	13	3	5	3	19	3	6	2	1	2	1	9

TABLE NO. 1.—(Concluded.)

MANUFACTURES IN CALIFORNIA, ACCORDING TO CENSUS OF 1870.

COUNTIES.	Whale Fishers	Wharf Builders	Wheelwrights	Wig Makers	Window Shade Maker	Wine Makers	Wire Workers	Windmill Makers	Wood Pavement Companies	Woodenware Makers	Wool Graders	Woolen Mills	Wool Puller	Wagon Makers	Yeast Powder Maker	Zinc Plate Cutter
Alameda														8		
Alpine																
Amador						10								6		
Butte														1		
Calaveras			2			58								8		
Colusa			2							1				2		
Contra Costa														1		
Del Norte			1											1		
El Dorado			1											2		
Fresno														2		
Humboldt			1											2		
Inyo			1													
Kern																
Klamath														1		
Lake														4		
Lassen			2			43								1		
Los Angeles																
Marin																
Mariposa			1											2		
Mendocino			1											1		
Merced												1				
Mono																
Monterey	2					1								5		
Napa														3		
Nevada			6											2		
Placer														2		
Plumas														1		
Sacramento				1								1		5		
San Bernardino																
San Diego	2															
San Francisco		2	2	9	1		3	3	2	2	2	2	1	24	1	1
San Joaquin														21		
San Luis Obispo																
San Mateo	1													3		
Santa Barbara	1					6								1		
Santa Clara												1		26		
Santa Cruz														7		
Shasta														2		
Sierra																
Siskiyou														1		
Solano			1			8								4		
Sonoma														23		
Stanislaus														3		
Sutter														3		
Tehama																
Trinity																
Tulare														1		
Tuolumne														3		
Yolo														2		
Yuba												1		7		
Totals	6	2	21	10	1	126	3	3	2	3	2	6	1	193	1	1

A careful examination of the foregoing table will explain the present condition of the manufacturing interests of the State better than they could be explained by an entire volume written for that purpose.

The fifty counties into which the State is divided are arranged alphabetically in the first column on the left. The number of Industrial Establishments in each is stated in the second column. The number of men, women and boys employed in these establishments in each county are shown in columns 3, 4 and 5. Columns 6, 7, 8 and 9 present the capital invested, wages paid for labor, cost of materials and value of the products of these establishments. The other columns contain a list, alphabetically arranged, of all the industries carried on in the State, except such as pertain to agriculture.

In order to find how many establishments of any particular manufacture there are in the State, find its name in the upper column; at the foot will be found the whole number, and in the intermediate lines the counties in which they are carried on.

From this list it will be seen that there are several industries peculiar to this State, which, under a more liberal policy than at present controls our affairs, might assume a much greater importance than they now possess. Among these undeveloped resources are Asphaltum mining, Petroleum collecting, making Borax and Sulphur, mining chromic and other ores of iron, and curling Soap-root as a substitute for horse-hair. The latter is quite a new industry, and employs a capital of nearly $50,000, 60 men and machinery of 40-horse power. The value of the product is nearly $100,000 annually, and is steadily increasing, because this material is the best substitute for hair ever discovered, and grows in unlimited quantities in all the foot-hill districts in the State.

The number of industrial establishments in the State in 1870, according to the above table, was 6,515; but of these fully three-fourths are Boot and Shoemakers, Tailors, Blacksmiths, Bakers, Carpenters and other branches of industry usually represented in every town and village in a civilized country, which, though exceedingly important to every community, are not such establishments as are required to develop the manufacturing interests of the State or to afford full employment to its labor and capital.

Deducting from the list the local artisans' shops, mining companies, fishermen and small establishments, the manufactures in the State may be summed up as follows:

LIST OF MANUFACTURES IN THE STATE.

4	Agricultural Implement Makers.
1	Bagging Weaving Mill.
6	Billiard Table Makers.
5	Boiler Makers.
8	Boot and Shoe Factories.
8	Box Makers.
13	Corn Broom Makers.
33	Brick Makers.
2	Brush Makers.
2	Candle Makers.
21	Carriage and Wagon Makers.
3	Cement Pipe Makers.
4	Chemical Works.
75	Cigar Makers.
2	Cordage Makers.
1	File Cutter.
150	Flour Mills.
2	Glass Works.
2	Gold Beaters.
6	Harness Factories.
12	Hatters.
1	Hydraulic Cement Maker.
6	Jewelers and Silver Plate Makers.
1	Lead Pipe and Shot Factory.
3	Smelting Works.
1	Linseed Oil Works.
60	Mach'e Shops and Iron Found'rs.
2	Metallurgical Works.
3	Pail and Tub Factories.
2	Paper Mills.
1	Piano Forte Maker.
20	Planing Mills.
1	Powder Works.
1	Rolling Mill.
10	Salt Makers.
1	Saw Maker.
22	Sash, Door and Blind Makers.
16	Shingle Mills.
300	Saw Mills.
10	Ship Builders.
10	Soap Makers.
3	Soap Root Curlers.
1	Starch Maker.
8	Straw Hat Makers.
1	Stone (artificial for building) Mk'r
2	Sugar Refineries.
40	Tanneries.
50	Tinsmiths.
6	Trunk Makers.
3	Type Foundries.
3	Wire Workers.
6	Woolen Mills.
954	

The number of persons employed in manufactures, according to the Federal Census returns, is 36,626 men, 1,253 women and 850 boys. These figures, if subjected to similar analysis, show that less than 5,000 men, not more than 300 women and only about 400 boys are employed in manufacturing in the whole State. Of the boys employed, 90 per cent. are engaged in the printing business.

The capital invested in manufactures, according to the Census, amounted to $76,947,310. If from this amount be taken the capital invested in mining enterprises and other branches of industry not properly classed as manufactures, the amount actually employed does not exceed $20,000,000. Estimating the capital employed in each of the above 954 establishments at $20,000, which is far above the actual figures, the amount would not reach $20,000,000.

These very suggestive statements are explained and corroborated by comparing them with the list of Imports and Exports for the same year.

The following table (No. 2), showing the population of each county, will be useful in connection with Table No. 1, as exhibiting how large a portion of the State is destitute of manufactures. This table was compiled from the Census returns on file in the U. S. Marshal's Office in San Francisco.

TABLE NO. 2.

THE POPULATION OF CALIFORNIA, ACCORDING TO THE CENSUS FOR 1870.

COUNTIES.	INHABITANTS.	COUNTIES.	INHABITANTS.
Alameda	24,237	Placer	11,357
Alpine	685	Plumas	4,489
Amador	9,582	Sacramento	26,830
Butte	11,403	San Bernardino	3,988
Calaveras	8,895	San Diego	4,951
Colusa	6,165	San Francisco	149,473
Contra Costa	8,461	San Joaquin	21,050
Del Norte	2,022	San Luis Obispo	4,772
El Dorado	10,309	San Mateo	6,635
Fresno	6,336	Santa Barbara	7,784
Humboldt	6,140	Santa Clara	26,246
Inyo	1,956	Santa Cruz	8,743
Kern	2,925	Sierra	4,173
Klamath	1,674	Shasta	5,619
Lake	2,969	Siskiyou	6,848
Lassen	1,327	Solano	16,871
Los Angeles	15,309	Sonoma	19,819
Marin	6,903	Stanislaus	6,499
Mariposa	4,572	Sutter	5,030
Mendocino	7,545	Tehama	3,587
Merced	2,807	Trinity	3,213
Mono	430	Tulare	4,521
Monterey	9,876	Tuolumne	8,150
Napa	7,163	Yolo	9,899
Nevada	19,134	Yuba	10,851
Total			560,223

TABLE NO. 3.

IMPORTS OF MANUFACTURED GOODS BY SEA IN 1870.

QUANTITIES.	ARTICLES.	VALUE.
36,029 cases	Boots and Shoes	$ 1,375,000
1,840	Doors (wood)	5,500
1,846 bundles	Window Sashes	17,000
179,590 boxes	Candles	540,000
14,337 packages	Cordage	720,000
19,053 packages	Furniture	750,000
22,771 packages	Malt Liquors	550,000
1,601 packages	Matches	19,000
64,146 packages	Dry Goods and Clothing	16,036,500
3,199 packages	Paper	100,000
12,962 bbls	Plaster	50,000
24,477 kgs and cs	Powder	75,000
5,721 packages	Hams, Bacon and Meats	170,000
7,514 packages	Butter	125,000
1,974 packages	Cheese	31,500
17,504 tons	Salt	520,000
62,319 boxes	Soap	85,000
30,000 packages	Spirits	1,100,000
49,597 packages	Starch	90,000
106,388 packages	Wine	3,250,000
8,000,000	Grain and other Bags	900,000
	Total in above list	$26,504,500

The articles in the above list are separated from the general importations, for the purpose of reference, in another portion of this Essay, to illustrate the consequences of importing what we could and should make at home.

The aggregate of importations may be classified as follows :

From foreign countries, subject to customs duties		$12,955,183
From Atlantic States, free of duty, 142,219 tons, estimated		28,000,000
From both sources, via Panama		10,835,167
		$51,790,350

To this amount must be added :

Freight on goods via the Cape	$3,484,090	
Freight on goods via the Isthmus	2,750,000	
Duties on imports, collected here	7,739,248	
		$13,973,338
Total cost of imports by sea		$65,763,688

IMPORTS BY CENTRAL PACIFIC RAILWAY.

General merchandise, valued at	$3,500,000	
Freight and charges on same	1,800,000	
		$ 5,300,000
Total cost of imports in 1870		$71,063,688

These imports, it should be remembered, were received during a year in which every branch of our home productive industry was in a very depressed condition.

TABLE NO. 4.

EXPORTS DURING 1870—HOME MANUFACTURED GOODS.

ARTICLES.	VALUE.
2,000 Bricks	$ 60
3,996 dozen Corn Brooms	14,000
13,324,900 feet Lumber	272,112
2,976,250 Shingles	8,709
Other forest products	2,885
221,945 bbls Flour	1,179,279
1,525 packages Glue	2,167
1,726 rolls Leather	90,000
987 bbls Lime	2,536
2,103 packages Maccaroni	3,728
122 packages Rosin	508
4,000 pairs Blankets	40,000
2,000 kegs Powder	5,000
18 Billiard Tables	23,000
50,000 packages Bread and Crackers	100,000
2,500,000 Cigars	50,000
Saddles and Harness	25,000
Machinery and Iron Work	250,000
400 tons Linseed Oil Cake	12,000
3,000 boxes Soap	2,500
Miscellaneous Articles	100,000
Total Home Manufactures exported	$ 2,202,205

EXPORTS, GENERAL, BY SEA AND RAILWAY (INCLUDING HOME MANUFACTURES.)

Merchandise by sea, per Custom-house returns	$17,848,160
Merchandise per railway, as per list	2,750,000
Treasure by sea and railway	32,983,140
Total exports	$53,581,300

The above exports, including all our grain, wool, wine and treasure, leaves a balance of trade against us of $17,482,388; to which should be added at least 20 per cent. for importers' profits and commissions, and the proportion of the treasure exported that belonged to the people of Nevada and Oregon, say $3,000,000, which swells the balance against us to upwards of $25,000,000 in a single year.

It is not improbable that some of the items in the above estimates are incorrect in many minor particulars, because it is impossible to obtain correct data for such a compilation; but the general fairness and application of these statistics will be admitted by every disinterested person who will take the trouble to investigate them.

To illustrate how some of these estimates were arrived at, the exports per railway are given in detail:

EXPORTS BY CENTRAL PACIFIC RAILWAY FOR ELEVEN MONTHS IN 1870.

22.100	pounds	Blankets	at 50	cents	per	pound.....	$ 11,050
877,074	"	Fish	" 10	"	"	.....	87,707
85,618	"	Fruit	" 10	"	"	.....	8,561
14,094	"	Glue	" 20	"	"	.....	2,980
72,940	"	Hides	" 20	"	"	.....	14,588
99,404	"	Hops	" 12½	"	"	.....	12,862
610,030	"	Leather	" 25	"	"	.....	152,509
20,475	"	Quicksilver	" 60	"	"	.....	12,285
160,874	"	Wheat	" 2	"	"	.....	3,217
1,376,451	"	Wine	" 6	"	"	.....	82,587
8,035,309	"	Wool	" 20	"	"	.....	1,607,061
6,090,031	"	Miscellaneous	" 6	"	"	.....	365,501
		Total for eleven months.....					$2,360,872
		Estimate for year.....					$2,750,000

But admitting, for argument's sake, that the above value of imports is estimated fifty per cent. too high, and that of exports the estimates are twenty-five per cent. too low, the consequences of starving our local manufacturing interests by the importation of goods we could make at home would still be most conspicuously apparent upon a careful study of these lists of imports and exports.

Let us look, for instance, at the items of Leather and Hides in the list of exports, and Boots and Shoes in the imports. These show that during 1870 we exported 2,425,380 pounds of Hides, which, at the estimated value of 21 cents per pound, amounts to $509,392, and 1,462,037 pounds of Leather, which, estimated at 25 cents per pound, amounts to $365,509, or $874,901 for all the Hides and Leather exported.

Per contra, we imported by sea and railroad 47,500 cases of Boots and Shoes, valued at $3,450,000. But, including importers' profits, commissions, freight and other incidental expenses, these imported goods cost the people of this State at least $6,000,000.

As an interesting subject of comparison, it may be stated that the value of all the Wheat exported from this State in 1870, according to the Custom-house returns, amounted to $7,974,345, when on board ship ready for sea. From this estimate must be deducted the cost of 4,197,397 bags, at, say 12½ cents each, or $503,687, and at least 10 per cent. of the total valuation for commissions, insurance and incidental expenses, or $800,000, leaving the actual price of the Wheat $6,670,658, or only $670,000 above the cost of Boots and Shoes imported. If we deduct the Wheat received from Oregon, which is included in our exports, it is doubtful whether our Wheat export covers the cost of Boot and Shoe imports.

The excellence of the home-made goods in this line leaves no room to doubt the skill of the local workmen in this department of our manufacturing industry, while our home-made Leather is unsurpassed in quality. With such facts patent to all, the question of exporting raw materials and importing manufactured goods is condensed into a single sentence. Why is such a ruinous system tolerated by a people generally regarded as enterprising and intelligent?

Let us examine into this subject a little more closely, and trace the effects of such a system. The making of the 47,500 cases of Boots and Shoes imported gave employment to several thousand men, women and children in the various ramifications of the business. The wages of these people sustained hundreds of small store-keepers, increased the circulation of money, and gave an impetus to every department of business in the localities where these goods were made, and aided in making those communities wealthy and powerful.

Now look on that picture and on this:

The preparation of the Hides and Leather exported afforded employment to but few persons, while the costs of the imported Boots and Shoes required by our working classes and their families absorb a large portion of their earnings, which is not expended here to sustain other branches of business, but is sent abroad to sustain those who compete with our local manufacturers. This system is the cause of the enormous balance of trade against us, and of the dejection and poverty that dwell in the homes of so many of our mechanics and artisans.

We send away, in the cheapest form, our substantial resources in exchange for inferior materials, increased 50 to 100 per cent. in value by the labor of our competitors, while our local work-people are compelled to work for wages insufficient to maintain them comfortably.

Those who supply us with what we should make ourselves retain most of the wealth we send to them, while all they send us is consumed. Is it any wonder that they become rich and that we grow poor ?

It is exceedingly painful to be compelled to depict the condition of so great a State as California in such sombre colors. But it is better, both for the capitalists and the producers of capital, to be honestly informed of the state of affairs than it is for them to be cheated with glowing pictures of a prosperity that has no existence.

There may be exhilaration in rapidity of progress, but it should not be forgotten, while enjoying such exhilaration, that the greater the velocity the greater the shock in the event of a sudden stoppage. Facts are very stubborn things, and it is a very stubborn fact, only partially illustrated by the above figures and remarks, that the policy of the people of this State towards their manufacturing interests—their encouragement of foreign manufacturers and neglect of those at home—is absolutely ruinous.

The inevitable effect of such a policy is clearly and forcibly illustrated in the following tables. No. 6 exhibits the actual and assessed value of every description of property owned by the people residing in the State.

The columns in this table, referring to the actual value of real estate and personal property, were compiled from the Federal census returns for 1870, and represent the estimate each individual gave of his own property. The columns showing the assessed value were compiled from the Surveyor-General's report to the Legislature, and from information obtained by direct correspondence with county officers, in cases when the Surveyor-General's report was incomplete.

The reader's particular attention is requested to the inequality in the assessed value of property in the several counties, because this unfairness in levying the expenses of the State will be subsequently referred to in this Essay as one of the causes that impede the development of our manufacturing interests. [See pages 176, 177.]

According to that table, the very highest estimate of the value of every description of property in the State, or owned by persons residents therein, in 1870, amounted to $628,788,017.

Table No. 5 exhibits the value of merchandise and treasure publicly exported from the State from 1848 to January 1, 1871. The aggregate of these exports foots up the enormous amount of $1,175,052,956, or $546,264,943 more than the highest estimate of the value of all the property owned in the State, demonstrating the results of exporting raw materials and neglecting our home manufacturing interests, by proving that we have irrecoverably lost upwards of five hundred millions of dollars of actual wealth in little more than twenty years.

If to the drain on our resources by exportation be added the State and County debts, and mortgages held on private property, which are lawful liens on what we have retained, the balance against our present policy will be increased $100,000,000.

Is not the investigation of such facts and figures entitled to consideration ?

The only aim of their author has been to obtain such consideration.

TABLE NO. 5.

VALUE OF MERCHANDISE AND TREASURE EXPORTED FROM CALIFORNIA, FROM JANUARY, 1848, TO DECEMBER, 1870.

YEARS.	MERCHANDISE.	TREASURE.	TOTAL EXPORTS.
1848 to 1850	$2,000,000	$66,000,000	$68,000,000
1851	1,000,000	45,989,000	46,989,000
1852	1,500,000	45,779,000	47,279,000
1853	2,000,000	54,965,000	56,965,000
1854	2,500,000	52,045,633	54,545,633
1855	4,189,611	45,161,731	49,351,342
1856	4,270,516	50,697,432	54,967,950
1857	4,369,758	48,976,692	53,346,450
1858	4,770,163	47,548,026	52,318,189
1859	5,533,411	47,640,462	53,173,873
1860	8,532,439	42,325,916	50,858,355
1861	8,888,072	40,676,758	50,564,830
1862	10,565,294	42,561,761	53,127,055
1863	13,877,399	46,071,920	59,949,316
1864	13,371,752	55,707,201	68,978,953
1865	14,554,130	44,426,172	58,980,302
1866	17,281,848	44,365,668	61,647,516
1867	22,421,298	40,671,797	63,093,095
1868	22,844,235	36,358,096	59,202,331
1869	20,846,379	37,287,114	58,133,463
1870	17,848,160	32,983,140	50,831,300
Totals...	$204,064,435	$968,238,521	$1,172,302,956

To which must be added $2,750,000 exported by rail in 1870, making the total value of public exports, $1,175,052,956.

The most conclusive proof of the views expressed in this Essay, that the exportation of raw materials never enriches a community, is furnished by comparing the figures in Table No. 4 with those in Tables No. 7 and 8, which exhibit the exports of treasure since 1862. This comparison shows that in proportion as the value of raw materials exported increased, the supply of money decreased and the value of imports increased.

TABLE No. 6.

ACTUAL AND ASSESSED VALUE OF PROPERTY OWNED IN CALIFORNIA IN 1870.

COUNTIES.	ACTUAL VALUE.			ASSESSED VALUE.			DIFFERENCE.
	REAL.	PERSONAL.	TOTAL.	REAL.	PERSONAL.	TOTAL.	
Alameda	$19,098,850	$4,523,650	$23,622,500	$9,621,800	$2,164,671	$11,786,471	$11,836,029
Alpine	246,205	100.320	346,525	246,205	100,320	346,525	.....
Amador	2,554,530	1,873,960	4,428,490	1,167,525	785,419	1,952,944	2,475,546
Butte	3,291,930	2,930,900	6,222,830	2,025,636	1,758,378	3,784,014	2,438,816
Calaveras	595,673	1,196,076	1,791,749	650,377	473,831	1,124,208	667,541
Colusa	5,403,274	3,294,794	8,696,068	2,403,279	1,935,762	4,339,041	4,357,027
Contra Costa	4,339,470	2,339,483	6,678,953	2,807,621	1,118,964	3,926,585	2,752,368
Del Norte	337,650	380,995	718,645	202,821	283,763	486,584	232,061
El Dorado	1,539,802	1,613,454	3,153,256	1,135,042	1,008,899	2,143,941	1,009,315
Fresno	2,120,055	1,654,240	3,774,295	1,706,301	1,307,297	3,013,598	760,697
Humboldt	2,156,480	1,975,838	4,132,318	1,165,120	1,001,420	2,166,544	1,965,774
Inyo	544,190	574,815	1,119,005	231,065	399,704	630,769	488,236
Kern	965,750	2,202,610	3,168,360	668,513	1,101,555	1,770,068	1,398,292
Klamath	255,785	270,090	525,875	153,484	257,877	411,361	124,514
Lake	887,350	378,940	1,266,290	332,061	377,893	709,954	556,336
Lassen	367,700	568,365	936,065	189,800	333,080	522,880	413,185
Los Angeles	7,737,731	3,819,026	11,556,757	4,356,609	2,311,331	6,667,940	4,888,817
Marin	4,396,965	2,683,093	7,080,058	2,751,816	1,022,939	3,774,755	3,305,303
Mariposa	670,500	659,275	1,329,775	613,075	584,398	1,197,473	132,302
Mendocino	1,710,140	1,971,747	3,681,895	618,546	1,593,977	2,212,523	1,469,372
Merced	2,462,132	1,732,381	4,194,513	1,032,818	1,206,388	2,239,206	1,955,307
Mono	138,975	222,985	361,960	120,585	196,123	316,608	45,352
Monterey	5,840,241	3,478,580	9,318,821	4,417,551	1,241,906	5,659,457	3,659,821
Napa	8,041,940	4,527,575	12,569,515	2,849,175	1,178,449	4,027,624	8541,891

Nevada	6,334,055	4,584,200	10,918,255	4,451,814	2,419,158	6,870,972	4,047,286
Placer	3,334,108	2,984,217	6,318,325	2,597,605	1,839,540	4,437,145	1,881,176
Plumas	1,068,555	1,222,610	2,291,165	571,226	661,133	1,232,359	1,058,806
Sacramento	13,014,360	25,856,435	38,870,795	5,718,275	5,455,429	11,173,704	27,697,091
San Bernardino	1,306,685	995,630	2,302,315	722,633	474,637	1,198,270	1,105,045
San Diego	2,856,097	1,624,359	4,480,456	3,051,617	1,474,589	4,526,206	954,250
San Francisco	165,259,771	97,796,741	263,056,512	72,500,000	29,587,989	102,087,989	160,968,523
San Joaquin	15,773,545	7,699,260	23,472,805	5,366,060	2,476,710	7,842,770	15,630,035
San Luis Obispo	1,956,678	1,432,338	3,389,016	978,339	716,169	1,694,508	1,694,508
San Mateo	14,272,400	9,014,425	23,286,825	1,598,981	343,050	1,942,031	21,344,794
Santa Barbara	7,370,752	3,525,269	10,896.021	884,669	729,418	1,614,087	9,281,934
Santa Clara	31,180,633	8,696,780	39,877,413	8,801,715	3,039,988	11,841,703	28,035,710
Santa Cruz	4,204,285	2,012,190	6,216,475	1,751,569	835,394	2,586,963	3,629,512
Sierra	1,160,494	1,107,185	2,267,679	928,395	903,748	1,832,143	435,536
Shasta	829,722	1,014,585	1,844,307	367,325	706,656	1,073,981	770,326
Siskiyou	1,593,447	2,408,600	4,002,047	1,547,145	2,122,330	3,669,475	332,572
Solano	14,487,415	4,870,295	19,357,710	5,242,939	1,702,787	6,945,726	12,411,984
Sonoma	10,301,467	5,233,951	15,535,418	7,026,148	4,279,129	11,305,277	4,230,141
Stanislaus	3,847,700	2,891,415	6,739,115	2,016,606	1,189,451	3,206,057	3,533,058
Sutter	2,030,708	1,676,940	3,707,648	1,122,442	981,250	2,103,692	1,603,956
Tehama	2,302,702	1,364,584	3,667,286	1,535,135	909,723	2,444,858	1,222,428
Trinity	560,941	515,524	1,076,465	78,675	517,486	596,161	480,304
Tulare	1,504,100	2,340,890	3,844,990	764,000	1,737,968	2,501,968	1,343,022
Tuolumne	829,465	1,066,380	1,895,845	600,997	585,227	1,186,224	709,621
Yolo	9,078,565	3,811,282	12,889,847	2,621,910	1,831,563	4,453,473	8,436,374
Yuba	2,336,808	3,550,956	5,887,764	2,214,115	1,852,042	4,066,157	1,821,607
Totals	$394,517,784	$234,270,233	$628,788,017	$176,527,180	$93,116,908	$269,644,088	$359,143,929

THE CAUSES THAT OPERATE AGAINST THE MANUFACTURING INTERESTS.

The primary cause and parent of a whole mischievous brood is our *peculiar currency*, which is more expensive, more unsuited to the requirements of trade and more difficult to retain than that in use by any other civilized community.

It is not an easy matter, under any circumstances, to remove a deep-seated popular prejudice. The difficulties attending such an undertaking are greatly increased when the local press is under the influence of those who profit immensely by pandering to such a prejudice. Because the press being the molder of popular opinion, when it submits favorably only one side of a great question for consideration, necessarily makes that side of it more popular than that which has no avenue to state its case fairly. The use of a metallic currency in this State is precisely such a prejudice.

At the risk of all the consequences of attacking the money power in its stronghold and of exciting the ire of the press, an attempt will be made to demonstrate that a strictly metallic currency is the great impediment to the manufacturing interests of the State.

No argument, as a general rule, is less forcible than that which rests on "what might have been." Yet it may be well, in order to illustrate the bearings of this important subject, to refer to what might have been the condition of affairs had those who control the finances of the State adopted the National Currency when it was first introduced; because there is no good reason to doubt that had they done so, California would to-day have been one of the richest, instead of as she is, one of the poorest States in the Republic. Instead of her mechanics and laborers being but partially employed and the whole capital of the State hypothecated to pay for importations, as at present, every branch of business would have been active, and our manufacturing interests in a flourishing condition. Immigration would have been encouraged by providing employment for thousands of mechanics and workmen and women in the manufacture of goods for both the home and foreign markets.

In 1862, when the National Currency was first presented to the American people as a "forced loan," and an indirect test of their loyalty, California contained, at a fair estimate, $25,000,000 in gold and silver coin. In a very short time after the issuance of the Legal Tender notes, they became greatly depreciated, so much so, as to be quoted in this market at 38 to 40 cents on the dollar. The National Bonds issued at the same time, and bearing a liberal interest, were purchasable with this depreciated currency at its original value. Now, had our local financiers made of "necessity a virtue" at that time, and invested the $25,000,000 of coin under their control in Legal Tender notes and Federal Bonds, the increase in value of these bonds and notes would in six years have added sixty per cent. to the active capital of the community and expanded every department of productive industry in a corresponding raito, because business is always governed by the amount of capital employed in its conduct.

Such a course would have given us the additional advantage of being able to transact our local trade in a currency which, being of more value at home than abroad, would not have been drawn from circulation to pay for goods manufactured abroad.

It would also have given us a banking system, under responsible supervision, which would inspire confidence, essential in order to obtain capital from abroad. It would have insured us *cheap capital*, because the Federal Government allowing six per cent. on funds invested in such banks, and exempting their funds from taxation, enables the National Banks to loan their funds at less interest than would satisfy an irresponsible private corporation, whose limited means must earn sufficient to meet all current expenses and losses, and to return a large interest to the stockholders.

The experience of every country has demonstrated that a strictly metallic currency is an obstacle to the expansion of manufactures, trade and commerce. With the exception of California, there is not a civilized community on the face of the earth that uses such a currency in the transaction of its business.

The supply of gold never equals the demand. Here the demand for export always restricts the supply for home use, consequently there is never a sufficient supply of our peculiar money to meet the wants of trade; and without an ample supply of money, neither trade nor manufactures can ever be active.

With but little more than 500,000 inhabitants, not one-fourth of whom are producers, California has produced more gold during the past twenty years, than all the rest of the world, and, notwithstanding its people employ their staple product as an exclusive currency, they possess less of it *per capita* than the people of countries which do not produce an ounce of gold, nor use that metal for currency. The primary cause of this state of affairs is: the excessive rates of interest on capital, rendered possible of exaction through the limited supply of an expensive, peculiar currency; and, secondly, the importation of manufactured goods, rendered unavoidable through the excessive interest on capital, which precludes its profitable employment in home manufactures.

The tables of imports and exports presented in this Essay prove that the balance of trade against us, through these causes, exceeds in amount the product of our gold mines. The exports of treasure for several years past, as will be seen by the following tables, have exceeded the product, and have reduced the volume of the currency to but little more than one-third of its proportions in 1862, and threaten to overwhelm us in disaster by contracting the supply to a still greater extent.

The receipts and exports of treasure from 1862 to 1871 are presented in the following tables, compiled from the Custom-house books and from statistics published in the leading journals of the State:

TABLE NO. 7.

RECEIPTS AND EXPORTS OF TREASURE FROM JANUARY, 1862, TO JULY, 1871.

YEAR.	RECEIPTS.	AMOUNT.	YEAR.	EXPORTS.	AMOUNT.
1863		$ 50,297,349	1863		$ 46,071,920
1864		53,513,383	1864		55,701,201
1865		53,744,399	1865		44,426,171
1866		46,776.241	1866		44,365,666
1867		50,597,600	1867		41,676,722
1868		51,173,955	1868		35,444,395
1869		49,286,474	1869		37,287,117
1870		43,560,055	1870		32,983,140
1871		5,493,338	1871		8,138,523
	Total	$404,442,794		Total	$346,094,855
	Excess of receipts over public exports				$ 58,347,939

From which must be deducted the Customs duties collected at this port, which are not included in the list of public exports.

TABLE NO. 8.

CUSTOMS DUTIES COLLECTED AT SAN FRANCISCO FROM 1862 TO 1871.

YEAR.	AMOUNT.	YEAR.	AMOUNT.
1863	$4,688,399	1868	$ 8,550,411
1864	6,378,384	1869	8,339,379
1865	7,812,868	1870	7,752,181
1866	7,189,763	6 months, 1871	3,408,381
1867	7,541,247		
Total			$61,666,013

To this amount must be added nearly $8,000,000 in gold transmitted through the Post Office, and the amount supplied to the people of Nevada, Oregon, Utah, Idaho and Montana, which is not included in any returns of exports. As nearly all the coin used in those States and Territories was obtained from this State, this amount, at a very low estimate, cannot be less than $20,000,000 in nine years. Deducting from the Customs duties $9,000,000 transferred from the Sub-Treasury on credits placed in the Federal Treasury at New York, the balance of exports above receipts of treasure foots up $17,629,675 since 1862, or more than two-thirds the metallic currency the State is supposed to have contained in that year.

The precious metals used in the arts and manufactures should also be deducted from the receipts, as it is generally coin, or bars obtained from the Mint, that are used for these purposes.

GOLD AND SILVER USED IN MANUFACTURES IN 1870.

	OZ.	VALUE.
Gold used by Jewelers in San Francisco	7,087	$127,000
" " by Dentists	627	12,540
" " by Gold Beaters	320	6,400
" " by Photographers	36	720
" " by Electroplaters	12	402
Gold Leaf used by Bookbinders and other trades		14,733
Gold Quartz used by Jewelers		3,800
Gold used by Jewelers and others in interior counties		87,007
Total Gold used in manufactures		$252,440

	OZ.	VALUE.
Silver used by Jewelers and Plate Makers	65,728	$ 81,000
Silver used by Jewelers and Photographers	2,127	2,658
Silver used by Jewelers and Electroplaters	700	750
Total Silver used in San Francisco	68,555	$84,408
Quantity used in interior counties		7,850
Total value of Gold and Silver used in the State in 1870		$344,698

Estimating the consumption at the same rate per annum from 1862 to 1870, the aggregate amounts to $3,102,282.

As a familiar illustration of the danger attending the use of a strictly metallic currency, and of the very limited supply of our peculiar money there is in the State, attention is called to a few circumstances within the remembrance of most of the readers of this Essay:

A year or two since the whole business of the State, it will be remembered, was nearly brought to a stand-still in consequence of there not being sufficient of our peculiar money to move the abundant crop of wheat from the fields of the producers to tide water. The Federal Government was appealed to in the emergency, and asked to make special arrangements to avert what the press, with singular unanimity, declared would be disastrous consequences, should the favor asked be denied. The Federal Government, with its characteristic care for the welfare of the country, overlooked the fact that the people of California had brought the threatening danger on themselves by rejecting the National currency, promptly transferred $2,000,000 of gold coin from the Federal Treasury into the coffers of the local banks, and the peril of a collapse in business was averted for the time.

It will also be remembered that on the outbreak of the recent European war the price of gold became so high at New York as to make it very profitable to send there. So large were the exports by rail that we were again threatened with disaster by being depleted of our peculiar currency. In this instance,

the railway, telegraph and express companies combined to make the expenses of transferring gold out of the State too high to leave any profit on such transfers, and the peril of a collapse in business was again averted.

While it must be admitted, under the circumstances of our peculiar currency, that the course adopted by the railway, telegraph and express companies prevented a very serious disturbance of business, it should not be forgotten that their action was an unwarrantable interference with the private rights of individuals.

The merchant controling a thousand or a million dollars has an absolute right to transfer his money to wherever it is most profitable to himself.

The infringement upon this right, in the instance referred to, has not been without effect on foreign capitalists, who can never be induced to place their money where it is not available for precisely such emergencies. Had the Federal currency been in circulation here, there would have been no necessity for such a mischievous interference with the private rights of individuals.

It would not be possible to present the danger imminent through this source in a stronger light than is thrown upon it by the above circumstances.

If the supply of a couple of millions averted a disaster in the one instance, and prevented the export of not more than a million in the other, the question must obtrude itself on the mind of every intelligent man, "If such comparatively small amounts can derange our whole system of business, are we not in constant danger of such derangements?"

California, furnishing seven-eighths of the gold used in the whole Republic, must give up a portion of her home supply whenever the other States require it; and there never has been a time when they require it so much as at present, for, according to the New York *Journal of Commerce*, the export of treasure from New York from 1st January, to 1st July, 1871, amounted to $44,738,410—an amount which has been exceeded only once in the past twenty years—and the demand is still so urgent, that twenty-dollar pieces are purchased at a premium of nearly one per cent. for exportation. The exports from Boston and all the other Atlantic ports are equally large.

It is worthy of special consideration that the circumstances of the people of the Atlantic States, their manufacturing and other industrial affairs are not in any way effected by this enormous drain of treasure. The cause of this immunity is, that the currency with which their business is conducted is of more value at home than it is abroad; while with us the export of an extra million of dollars, or even the probability of such a circumstance, causes a derangement of business, because our peculiar currency is of more value abroad that it is at home.

Were the people of the Eastern States using a metallic currency, or one based on specie, the export of so large an amount of treasure would have caused one of those financial disasters which are inevitable in every nation or community employing a currency liable to a demand for exportation.

This well-understood law of finance compelled the Federal Government to change the value of our silver currency in 1853. At that time our silver coins were intrinsically worth a per cent. more than their nominal value, and this caused them to be in demand for export. To prevent the drain of silver, and the impediment to business caused thereby, the coinage of the silver dollar was altogether discontinued, and the other coins of this metal debased 6 per cent., as compared with their value in gold. This explains why so much silver is used in this State. The purchaser of gold, who allows 1½ per cent. discount on silver, makes a profit of 4½ per cent. by the export of the gold.

It matters not how much abuse may be heaped on the National currency, or on those who advocate its general use in this State, the experience of ten years of the most severe test has demonstrated the fact that a paper currency based on the credit of a wealthy Nation, for exclusive use amongst its own people, with which its whole internal revenue is collected and all public services are paid, and its whole internal trade can be conducted, is the safest and best currency in the world.

The progressive spirit of the people of this Republic has exploded not a few of the traditions and notions of those of the old world on matters of art, commerce, war and manufactures.

Sawing and sewing machines, lightning printing presses and telegraphs, American inventions, are universally recognized as great aids in the expansion

of commerce and manufactures. Monitors, iron-clads and monster Columbiads, also American inventions, have been adopted by every nation as improved implements of war.

Universal suffrage and a strictly representative form of government are American institutions, for the enjoyment of which the peoples of the world are sighing. But, great as has been the influence of American inventions and institutions on the commerce, trade, manufactures and social and political condition of mankind, the establishment of a system of finance, which leaves gold for exclusive use as an international currency and employs for home use a paper currency based on the public credit, will effect much grander reforms in the trade and commerce of the world and in the social condition of humanity, by preventing those periodical financial disasters, which bring misery and suffering on millions of innocent heads by disturbing the course of trade and throwing out of employment the working classes.

The American system of finance is as certain to be adopted by the rest of the world as have been the other inventions and innovations of the American people.

THE COSTS OF MAINTAINING A METALLIC CURRENCY.

Attention is called to the following facts and figures, which show some of the expenses attending the use of our peculiar currency.

The Federal Internal Revenue collected in the City of San Francisco in 1870 amounted to $3,368,226. The collections of this Revenue in the whole State amounted to $4,983,700.

The receipts of the Post-office in San Francisco during 1870 amounted to $1,011,731, and those of all the Post-offices in the State to nearly $3,000,000.

The receipts of the various Federal Courts and offices in the State exceed $3,000,000 annually.

The freight and charges on cargoes received from the Atlantic States in 1870 amounted to nearly $2,000,000.

The whole of the above amounts, $12,000,000, were paid in Federal currency, as were also upwards of a million of dollars paid as fares and freights to the Pacific Railroad Companies, and another million was used in business, and to remit by mail through the Post-office, or, say, $14,000,000, of the Federal currency is required annually to transact the business of the people of this State. This money, being uncurrent, must be purchased from brokers and money changers, who charge from one to two per cent. more for it than its value according to gold. This entails an expense of nearly $200,000 per annum on the business of the State. A rather heavy tax for such a privilege.

The working classes of this State, educated by the press to a false view of this subject, while hugging to their bosoms the delusion that the payment of their wages in gold is, in some inexplicable way, an advantage to them, are rarely if ever paid in that metal. Fully three-fourths of the employers of labor in the State pay their hands in silver, which is intrinsically worth six per cent. less than gold.

The wear and tear of gold coin, according to the estimates of the best authorities on the subject, averages three per cent. per annum, a price equal to the rental of money in Europe. The cost of the Federal currency does not exceed one-tenth of one per cent. per annum for wear and tear—a new note being obtainable for a tattered one at any of the Federal banks free of expense.

The restriction of the currency to gold, (silver above $5 in amount not being a Legal Tender,) enables a few individuals to regulate the rate of interest on money. Herein lies the very root of the evil that prevents the development of our manufacturing interests. It is an aphorism in finance, that "whatever power, be it a government, a corporation or an individual, controls the currency of a community, such controlling power fixes the rate of interest on money in such community."

It is the excessive rate of interest on a limited supply of money controlled by private parties that seriously interferes with the manufacturing interests, and

causes the balance of trade to be against the State. The parties controlling this money have a direct pecuniary advantage in the continuation of the existing condition of the manufacturing interests; because their limited funds are more profitable when employed to aid speculations and importations than they would be if employed in productive industry.

This very important fact is clearly illustrated by comparing the capital employed in stock and real estate speculations, in importations and in manufactures.

The sales of real estate in this city alone during 1870 amounted to $15,630,-272. In 1869 they exceeded $30,000,000.

The sales of stocks and shares at the Stock Exchange in 1870 amounted to $51,186,450, and in 1869 they amounted to nearly 70,000,000, and many millions of dollars worth were sold privately.

The value of imports in 1870 exceeded $71,000,000. The capital employed in manufactures did not amount to $20,000,000.

The cause of this ruinous system is clear. Speculators and importers obtain all the accommodation they require at the commercial banks. Real estate speculators have the whole of the immense funds of the Savings Banks under their exclusive control, while the manufacturer can obtain no accommodations at any of the banks.

The effects of this policy are seen in the following statement:

The $20,000,000 employed in manufactures paid $21,000,000 for labor and nearly $30,000,000 for materials, which employed other labor in their production and preparation, and thus aided in sustaining every branch of business by increasing the circulation of money. For it should be remembered that it is the money paid for wages and materials that supports the active trade of every community.

The much larger capital employed in stock and real estate speculations afforded employment to but few persons, and set very little money in circulation. The capitalist, controlling millions of dollars, by means of which he can "bull" or "bear" the markets whenever it suits his caprice or interests, though he make a million by such an operation, does not employ an additional laborer or add a dollar to the circulating medium. On the contrary, he absorbs the capital or savings of a swarm of persons possessing moderate amounts, which they are led to invest in the stock "influenced" by the millionaire, under the infatuation that they can win in a game in which he has packed the cards to make whatever turns up trumps for himself.

The expenses of maintaining a metallic currency are so clearly shown in the following illustration that further reference to the subject should not be required.

Estimating the funds employed by all the savings banks in the State at $38,000,000 and those of all the commercial banks at $30,000,000, and calculating that the whole of this capital earns, as interest, an average of 10 per cent. per annum, this interest foots up $6,800,000.

Had we National Banks and currency, the rate of interest would be only 6 per cent, (it is less in New York), and would amount to $4,080,000, or a difference of $2,720,000 per annum in favor of the National currency and cheap capital.

The payment of nearly $3,000,000 annually to private corporations for the privilege of using their "credit" is not the worst feature of the case. The rejection of the National banking system and currency places the bulk of the banking business of the State in the hands of foreigners, who annually draw upwards of $1,500,000 out of the State as dividends to stockholders residing in Europe, because the people here accept the credit of these foreign bankers in preference to that of the Federal Government.

The stagnation pervading every department of business is not a whit too severe a punishment for such folly and lack of patriotism.

THE EFFECTS OF THE RATE OF INTEREST ON CAPITAL ON GENERAL BUSINESS.

The rate of interest on capital influences the expenses attending every branch of business, as well as the price of labor.

It is not so much the high price of labor in this State that impedes the manufacturing interests, as the excessive interest on capital.

The more liberally the working classes are rewarded for their labor, the more active is general business, because it is the wages of labor that form the circulating medium which facilitates production and consumption.

Business is never vigorous in the community in which the working classes earn only sufficient to barely support themselves and families.

It is the surplus earnings of labor that creates free capital.

The wages of labor in a community where the rate of interest on capital is excessive, as in this State, cannot fairly be compared with the wages paid in other communities, where the rate of interest is low, because the purchasing power of a dollar is not as great in the former as in the latter. The merchant or store-keeper, the rental of whose capital costs 12 to 18 per cent., cannot sell his goods as cheaply to consumers as those whose capital costs only 2 to 4 per cent. It is the high rate of interest on capital that increases the costs of living and keeps up the rate of wages.

Were the rate of interest as low here as it is at New York or Boston—and the only reason why it is not is our peculiar currency—labor would be as cheap here as in either of those cities, while the working classes would have the advantage of full employment, a genial climate and generous soil, which make all the necessaries of life cheap, and thus increase the purchasing power of their wages.

It is neither just nor politic, under the existing state of affairs, to compel the working classes to bear all the effects of the change in business brought about by the completion of the trans-continental railway. Labor has suffered a serious depreciation since that event, while capital still demands the same rental for its use as it received before the railroad was completed. Capital is better able to bear the burden of such changes than labor, because its earnings are all gains, and add to its productiveness, while the earnings of labor are all absorbed in ex enses, and cease with its employment.

Thus, high interest on capital interferes with business directly, by increasing its expenses, and indirectly, by oppressing the laboring classes, its chief supporters.

THE EFFECT OF SAVINGS BANKS ON THE MANUFACTURING INTERESTS.

There are few institutions more advantageous to the interest of an enterprising community than well-conducted Savings Banks, because they encourage thrift and industry and increase the means for the employment of labor by utilizing the surplus earning of the working classes.

When Savings Banks confine their operation to these, their only legitimate objects, they render an important public service.

It is much to be regretted that these institutions in this city do not render such service. Instead of employing their immense funds—a considerable portion of which is the surplus earnings of labor—to sustain and extend the manufacturing interests and thus increase the avenues for the employment of the classes that created and maintain them, they employ all their funds to encourage speculation in real estate.

According to the published reports of the condition of these Savings Banks in this city, for June 1870, when, as already shown, only about $20,000,000, were employed in manufactures in the whole State, these Banks held on deposit the enormous sum of $29,842,112, which has been increased to $34,541,597, in July, 1871. Not a dollar of this enormous amount has been loaned to

encourage manufactures or any other branch of productive industry. The whole of it has been employed in inflating the value of real estate. Thus the greater portion of what should be the active capital of the State is tied up and rendered worse than useless to the manufacturing interests.

The parent of such a ruinous system is the excessive rate of interest on capital; the motive for its maintenance, unmitigated selfishness, which risks future permanent prosperity to obtain a present temporary advantage. Neither the system nor its baneful effects would be possible were the National currency in general use, because the supply of capital would be larger and the rate of interest would not be sufficiently high to attract it so generally from productive industry.

It is a dangerous delusion to suppose the deposits in these Savings Banks are exclusively the property of the working classes. The bulk of them belong to wealthy capitalists and non-residents. Were it otherwise, the condition of these Banks would be an unanswerable argument in favor of the existing condition of affairs. Because, if the surplus earnings of the working classes were as large as the increase in the deposits in these banks would indicate, $4,699,485 in a single year, there would be no necessity for a change, because the laboring classes in no other country or community could save as much as those of this city, if these bank deposits be accepted as a criterion. Were there 50,000 working people in this city and each of them had deposited $90 in these banks, the whole of their deposits would not amount to a sum equal to the increase of the deposits in the Savings Banks during the past year—a year in which every department of business and industry has been unusually depressed, and a large portion of the working classes out of employment.

The exemption of mortgages from taxation, an injustice procured through the influence of these Savings Banks, under the pretence that it would reduce the interest on capital, is equal to 3 per cent. in favor of money loaned on mortgage, as against that employed in manufactures or other branches of industry. It is this most unfair distribution of the burden of taxation that increases the deposits in Savings Banks, by absorbing the capital that otherwise would be employed in manufactures; because it is more profitable in the bank than it would be employed in any legitimate business.

If the money deposited in these banks belonged to the laboring, or any class of residents of the State, the greater portion of it and its earnings should be retained at home; whereas, the returns of these establishments recently published, show that in June, 1870, they held $1,947,272, "cash on hand," and in June, 1871, their "cash on hand" amounted to $2,728,325, less $1,592,022 paid as dividends. Now, it is notorious that all the money in the State, outside the Federal Treasury, does not equal one-half the difference between the "deposits" and "cash on hand" of these banks.

The receipts and exports of treasure during the past nine years, as stated in Table No. 7, clearly establish this very important fact.

The causes of this dangerous loss of the cash capital of the State become obvious on investigation.

For instance: An individual owns a tract of sterile land in the vicinity of the city. Through the aid of these savings banks, (which loan more than the actual value of the property for the purpose), it is subdivided into "homestead lots," and disposed of to mechanics, laborers and other poorer classes. Every purchaser must pay from 2 to 3 per cent. of the amount of the purchase money to the bank's agents in the shape of fees, and 1½ to 2 per cent. per month interest on the loan obtained from the bank. The purchasers of many of such lots obtained additional loans to build a home. Those who did not, continue to pay 18 to 24 per cent. interest on the original unproductive purchase, which, in nine cases out of ten, absorbs more than their surplus earnings and makes them the willing slaves of a power they themselves aid in creating. For, as Henry Ward Beecher says of interest on borrowed money: "No blister draws sharper than interest. Of all the industries, none is comparable to interest. It works all day and all night, in fair weather and foul. It has no sound in its footsteps, but nevertheless travels fast. It gnaws at a man's substance with invisible teeth. It binds industry with its film, as a fly is bound in a spider's web."

In 1869, during the prevalence of the "homestead fever," generated to a great extent by these savings banks, as a means to profitably employ their im

mense funds, the payments on homestead shares, held chiefly by the working classes in this city, exceeded $300,000 per month, or $3,600,000 per annum, equal to more than one-third of all the wages paid for labor in the city. According to the statistics of manufactures in Table No. 1, the whole amount of wages paid was only $8,118,057 in 1870, and it was considerably less in 1869.

This picture, though presenting such a terrible aspect that it seems like an exaggeration, is fully corroborated by the fact that the $34,500,000 under control of these banks, in order to pay 10 to 12 per cent. dividends over and above expenses, losses and taxes, must have earned $4,000,000 during the past year. The whole of this amount was gathered from borrowers on real estate, and shows how heavily the owners of property are taxed to keep up the rate of interest on capital, through institutions originally intended to encourage productive industry.

Nor is this the worst feature of the pernicious system that sustains them. The original owner of the land sold for "homesteads," to exempt his funds from taxation and make it productive, deposits them in the savings banks and obtains 10 to 12 per cent. interest on the amount, with which he can live like a prince in the Atlantic States or Europe, because the lower rates of interest on capital in those countries lessen the costs of living. This is one of the leading causes for so much absenteeism among our wealthy classes. A much larger amount of the money collected by these banks is sent out of the State through this avenue than most persons, who have given the subject no consideration, can have any adequate idea of.

Agents of foreign manufacturers also draw largely of the dividends of these banks, which thus encourage the importation of manufactured goods.

In Europe, the interest on capital is rarely above 3 per cent. per annum, and capital is always in excess of the demand. To employ their capital, labor and machinery, foreign manufacturers make heavy consignments of goods to this market, on a venture. The sale of the whole of such a consignment may cover a period of years ; but the proceeds of the sales of such portions thereof as may be disposed of from time to time, deposited in these savings banks, and by that means exempted from taxation, insure more than European interest on the whole consignment, should even a considerable portion be sold for "costs and charges." This practice, which prevails very extensively, and is rapidly expanding, inflicts very serious injury on our manufacturing interests.

Thus it is very clearly demonstrated that the existing savings bank system is an injury to the State, by taxing its productive resources to keep up the rate of interest on capital, and by directly encouraging the importation of manufactured goods, which, but for such influence, might be made at home.

What will be the ultimate result of restricting the employment of the immense funds under control of these banks to real estate, is a question pregnant with the financial destiny of this generation.

Can the productive industry of the State, which derives no direct benefit from these banks, continue to pay 12, 10, or even 5 per cent. interest on the funds deposited with them ? If not, what then ?

HOW THE RATE OF INTEREST ON CAPITAL CONTROLS THE MANUFACTURING INTERESTS.

An excessive rate of interest on capital is a much more serious obstacle to manufacturing industry than the majority of the people of this State appear to think.

Bigots in the barbaric creed that considers nothing fit for money except gold, employing a currency of which the smallest coin in general use is one-tenth of a dollar in value—a currency that frequently causes a difference of 20 to 50 per cent. in the cost of minor articles in constant requirement—such a people cannot readily be induced to calculate the potent influence of solitary cents, their fractions and immediate multiples.

The old adage of our forefathers, "Take care of the pennies and the pounds will take care of themselves," has neither force nor influence with a

people, the poorest beggar amongst whom would not stoop to pick pennies from the sidewalk, because they would be as useless as pebbles for the purpose of purchasing the necessaries of life.

Yet, it is the correct appreciation of the value of the fractional portions of the smallest coins that often builds the most colossal fortunes.

Had the elementary principles of political economy and the laws of trade been better understood by all classes of our people, the influence the rate of interest on money exerts over the manufacturing interests would long since have convinced them of the perils of the existing financial system and its peculiar currency.

The influence of the rate of interest on money is more direct on productive industry than it is on speculative enterprises, because the latter are akin to gambling, which is independent of all principles and laws, while the former is controlled by laws which can never be violated with impunity.

The enterprise incident to a cosmopolitan community like California, containing among its elements the most daring and energetic of the peoples of the entire world, attracted together by the desire for wealth—the ruling trait in human nature—cannot be stifled. The controlling motive of such a people must find vent, either in legitimate enterprises or in wild speculations.

The responsibility of diverting the attention of such a people from the pursuits of productive industry and legitimate enterprise, to absorb their energy and means in reckless speculations, rests on those who have wasted both, in the wildest of all speculations, that of attempting to maintain an exclusively metallic currency in opposition to the policy of the whole civilized world.

How the rate of interest on money influences the manufacturing interests may be thus illustrated:

In this city, at this time, (July, 1871,) according to the daily reports published by authority of the leading banks, the rate of interest on money ranges from 12 to 15 per cent. per annum, on call, on first-class collaterals. Those who have no influence with the banks pay from 15 to 24 per cent.

Similar loans to those first mentioned may be obtained by merchants and business men at New York at 4 to 5 per cent., and the second class at 5 to 7 per cent.

In London, the first class of borrowers are accommodated at 2½ to 3 per cent.; the second class at 3 to 4 per cent.

The difference in the rental of money—the very life of trade—it is thus seen, is from 10 to 15 per cent. against the business men of this State, as compared with those of the Atlantic States and Europe.

The rates of interest charged by the savings banks, 10 to 15 per cent., are not taken into consideration in this comparison, because the funds of these institutions are prohibited by law from being employed or loaned on commercial paper.

It should require no special arguments to convince any intelligent person that in countries where money is abundant at 2 to 4 per cent. per annum, every article, the material of which, or the labor employed in its production, must be purchased with money, must be cheaper than in countries where the money employed costs 12 to 18 per cent.

The lower rate of interest on money in the Atlantic States and Europe is the real cause why the manufacturers of those countries can undersell our local manufacturers in our home markets, notwithstanding that the former have to transport their goods across the continent by rail, or almost around the world by sea.

The price of labor in this State, as compared with that of other countries, usually alleged as the cause of the languishing condition of our manufacturing interests, bears no comparison in importance, in the consideration of this question, to the effects of excessive interest on capital and its consequent absorption in speculative combinations.

The Federal tariff on foreign manufactured goods, and the costs of transportation, insurance and incidental expenses on goods imported from the Atlantic States by rail, nearly equal the difference between the cost of such goods made here and those imported. It is the 10 to 12 per cent. difference in the rental of the capital employed in the business in favor of the Eastern and European manufacturers that encourages the importation of a long list of articles which otherwise would be made at home.

It is cheap capital that is required more than cheap labor.

Cheapness of labor is of far less importance, in the consideration of the causes that adversely affect our manufacturing interests, than the *employment* of labor.

In a great and wealthy Republic, dependent on the intelligence and patriotism of its citizens for its existence, in which the humblest and most obscure citizen of to-day may, to-morrow, be called upon to assume the reins of its government, "cheap labor," in the full significance of the expression, is to be deprecated as an evil threatening the vitality of the Republic.

Cheap labor implies ignorance and poverty as the lot of the laborer.

Cheap labor means dwarfing the intellect—the God-like attribute of man—through physical exhaustion. It means an unequal competition between human strength and endurance pitted against steam and the elemental powers acting as motors to metallic machinery—a conflict in which the less intelligence in the laborer, the more valuable his services to the employer.

To maintain our republican institutions in their vigor, it is imperative that the laboring classes have leisure for study and mental culture—ends impossible to attain if incessant toil be required to procure the necessaries of life.

Of what advantage were our public schools, if the seeds of knowledge planted in the infant mind through their influence be "nipped i' the bud," and produce neither flower nor fruit in mature manhood?

Examine the cause of the lack of vitality in our manufacturing interests from whatever point we may, the conviction forces itself upon us that it is the excessive rate of interest on capital—a cause certain in the end to inflict greater injury on those who now reap the advantage of its effects than it inflicts on the working classes.

Then honor to our working men,
  The hardy sons of toil,
The heroes of the workshop,
  The monarchs of the soil.
Who spans the earth with iron ?
  Who rears the palace dome ?
Who creates for the rich man
  The comforts of his home ?
It is the patient toiler ;
  All honor to him, then ;
The true wealth of a nation
  Is in her working men.

THE VALUE OF LABOR IN CALIFORNIA IN 1871.

COUNTIES.	Farm hands per month, with board	DAY LABORERS.		CARPENTERS AND BLACKSMITHS.	Price of board, per week, for laborers
		Per day, with board.	Per day, without board.	Per day, without board.	
Alameda	$30 00	$2 50	$1 75	$3 50	$5
Alpine	40 00	3 00	2 00	5 00	7 00
Amador	30 00	2 50	2 00	4 00	6 00
Butte	30 00	2 50	2 00	4 00	5 00
Calaveras	25 00	2 50	1 75	4 00	4 50
Colusa	30 00	3 00	2 00	4 00	5 00
Contra Costa	30 00	2 50	1 50	3 50	5 00
Del Norte	30 00	2 50	2 00	3 50	4 00
El Dorado	30 00	2 50	2 00	4 00	5 00
Fresno	30 00	2 00	1 50	3 50	5 00
Humboldt	40 00	2 00	1 50	4 00	4 00
Inyo	40 00	4 00	2 50	6 00	10 00
Kern	40 00	3 00	2 00	5 00	7 00
Klamath	30 00	3 00	2 00	4 00	6 00
Lake	30 00	2 00	1 50	3 50	5 00
Lassen	30 00	3 00	2 25	5 00	6 00
Los Angeles	30 00	2 00	1 68	4 00	5 00
Marin	30 00	2 00	1 50	4 00	4 00
Mariposa	36 00	3 00	2 00	4 00	6 00
Mendocino	30 00	2 50	2 00	4 00	5 00
Merced	35 00	2 00	1 25	4 00	6 00
Mono	40 00	4 00	3 00	6 00	8 00
Monterey	27 50	2 00	1 50	3 50	4 50
Napa	28 00	2 50	2 00	4 00	6 00
Nevada	25 00	3 00	2 00	4 00	6 00
Placer	30 00	2 50	1 50	4 00	6 00
Plumas	45 00	3 00	2 00	5 00	6 00
Sacramento	30 00	2 50	2 00	4 00	5 00
San Bernardino	25 00	2 00	1 50	3 50	6 00
San Diego	50 00	4 00	3 00	5 00	7 00
San Francisco	28 00	2 00	1 50	4 00	4 00
San Joaquin	25 00	2 50	2 00	4 00	5 00
San Luis Obispo	30 00	2 00	1 50	4 00	5 00
San Mateo	30 00	2 50	1 50	4 00	4 00
Santa Barbara	30 00	2 50	2 00	4 00	5 00
Santa Clara	35 00	2 50	2 00	4 00	5 00
Santa Cruz	30 00	2 00	1 34	4 00	5 00
Sierra	40 00	3 00	2 00	4 00	6 00
Shasta	30 00	2 50	1 50	5 00	5 00
Siskiyou	30 00	2 50	2 00	4 00	5 00
Solano	30 00	2 50	2 00	4 00	5 00
Sonoma	30 00	2 25	1 75	4 00	5 00
Stanislaus	30 00	2 50	1 75	3 00	4 00
Sutter	30 00	2 00	1 50	4 00	4 00
Tehama	30 00	2 50	1 50	3 50	6 00
Trinity	40 00	3 00	2 00	4 00	6 00
Tulare	40 00	2 50	1 75	3 50	5 00
Tuolumne	30 00	2 00	1 50	4 00	4 00
Yolo	25 00	2 00	1 50	4 00	5 00
Yuba	25 00	2 50	1 50	4 00	5 00

It will be seen, on examination of the foregoing table, that labor is always dearest where in least demand. This arises from the sparseness of the population and the centralization of employment. There is the compensating advantage, however, that where labor is cheapest the costs of living are lowest.

INEQUALITY OF TAXATION AN INJURY TO THE MANUFACTURING INTERESTS.

The inequality of taxation is an injury to the manufacturing interests, by causing the centralization of capital and labor in counties where taxation is lowest, and by preventing the development of the resources of the counties where taxation is highest.

The following table exhibits the rate of taxation in each county in the State for 1870. The rates for the present year have not been materially changed; but it is impossible to obtain similar details to compile such a table for 1871.

The inequality in the rate of taxation becomes more conspicuous when this table is compared with Table No. 6, in which is shown the difference between the actual and assessed value of the property in each county:

TAXATION IN EACH OF THE COUNTIES OF CALIFORNIA IN 1870.

COUNTIES.	STATE TAX.	COUNTY TAX.	TOTAL.	COUNTIES.	STATE TAX.	COUNTY TAX.	TOTAL.
Alameda	86½	$1 30½	$2 17	Placer	86½	$1 73½	$2 60
Alpine	86½	2 42½	3 29	Plumas	86½	1 44	2 30½
Amador	86½	1 60½	2 47	Sacramento	86½	1 53½	2 40
Butte	86½	1 83½	2 70	San Bernardino	86½	1 45	2 31½
Calaveras	86½	4 13½	5 00	San Diego	86½	2 00	2 86½
Colusa	86½	1 24	2 10½	San Francisco	86½	2 21½	3 08
Contra Costa	86½	2 07½	2 94	San Joaquin	86½	3 63½	4 50
Del Norte	86½	1 83½	2 70	San Luis Obispo	86½	1 85	2 71½
El Dorado	86½	1 98	2 84	San Mateo	86½	2 53¾	3 40¼
Fresno	86½	1 25	2 11½	Santa Barbara	86½	2 08½	2 95
Humboldt	86½	2 24	3 10½	Santa Clara	86½	1 21	2 07½
Inyo	86½	2 22½	3 09	Santa Cruz	86½	2 13½	3 00
Kern	86½	1 55	2 41½	Sierra	86½	1 73	2 59½
Klamath	86½	1 90	2 76½	Shasta	86½	1 70½	2 57
Lake	86½	2 13½	3 00	Siskiyou	86½	1 40	2 26½
Lassen	86½	2 00	2 86½	Solano	86½	2 05½	2 92
Los Angeles	86½	1 90	2 76½	Sonoma	86½	1 64	2 50
Marin	86½	1 60	2 46½	Stanislaus	86½	93½	1 80
Mariposa	86½	2 18	3 04½	Sutter	86½	3 21½	4 08
Mendocino	86½	1 83½	2 70	Tehama	86½	1 50	2 36½
Merced	86½	1 20	2 06½	Trinity	86½	1 95	2 81½
Mono	86½	2 13½	3 00	Tulare	86½	1 53½	2 40
Monterey	86½	1 75	2 61½	Tuolumne	86½	3 70	4 56½
Napa	86½	2 35	3 21½	Yolo	86½	1 30	2 16½
Nevada	86½	1 13½	2 00	Yuba	86½	1 68½	2 55

THE RELATIONS BETWEEN CAPITAL AND LABOR.

The oft-repeated assertion, that there exists a *natural* conflict between capital and labor, is a base calumny on the fulcrum and lever that move the world, which Archimedes thought about, but of which we have the demonstration.

When directed for the best interests of both, there is as much harmony between capital and labor as exists between any of the great principles which, under Divine direction, control the physical existence of man.

Intelligence, development—moral, social and physical—were impossible without *both* labor and capital. Manufactures, arts, science, commerce, had no existence but for labor *and* capital. The post of honor in winning their present eminence is fairly due to labor ; because labor does—capital only sustains.

The struggle for supremacy now pending between capital and labor in every civilized country—a struggle, the measure of the force of which is the intelligence of the laboring classes—is unnatural, having its origin in man's selfishness, violating Nature's sublimest laws. The effects of the struggle are proofs, for our instruction, that these laws cannot be violated with impunity.

The clashing of interests between capital and labor is the work of a class, generated by the artificial nature of modern civilization—a class which supplies the world neither labor nor capital, yet manages to obtain the richest fruits of both.

A careful search into the history of the majority of the institutions which to-day control the finances of communities and countries, will show that the founders of these institutions possess no absolute capital unless we accept as true the financial fiction that "credit is capital." By acting as "middlemen" between the producers and users of capital, collecting toll from both, the managers of these institutions have made themselves "masters of the situation," and array labor against capital, using the strength of one to weaken the other, till both lie prostrate at the feet of a power created by the sacrifice of their mutual strength.

Capital being timid and labor thoughtless, any power promising security to the one and employment to the other, always finds supporters, though the pages of the world's history are crammed full of the records of the wrecks of such exhausting alliances.

Labor having produced capital, it would be contrary to Nature's primary principle were the creature greater than its creator.

It is labor only that can make capital productive. Unemployed capital is self-consuming, unemployed labor is merely unprofitable.

Under a Republican form of Government labor should be more powerful than capital. Under intelligent direction, when the laws governing both are better understood by the people, capital will be subordinate to labor, because labor votes legitimately. Capital can only control the votes of those unworthy the privilege of exercising that soveriegn power.

THE INFLUENCE OF THE TARIFF ON THE MANUFACTURING INTERESTS.

Having shown the importance of manufactures and explained some of the causes that operate against them in this State, it would be a serious omission in an Essay of this character were the influence of the Tariff not referred to.

The questions of Tariff, Free Trade, Protection and Revenue, are powerful weapons in the hands of demagogues in swaying popular opinion during a political campaign, owing to the want of knowledge about these subjects among the mass of the people.

Stripped of the extraneous matters in which they are involved by those who have an object in mystifying the people, the Tariff, Revenue, Protection and Free Trade, questions of infinitely more importance than the existence of ephemeral political parties, are as simple as the rules of common arithmetic, and, like those rules, best learned by studying their elementary principles.

Revenue, Protection and Free Trade are subordinate divisions of the great question of a Tariff.

A Tariff, as understood in this connection, is the duty levied on the products of foreign countries. Every nation produces some articles required by other

nations which either cannot produce them or not as cheaply. This principle is the basis of "commerce."

The policy of every civilized nation is to exempt from import duties, or the Tariff, raw materials required in home manufactures when such materials cannot be obtained at home, and articles required for food.

It is also the policy of every nation to impose duties on such manufactured articles as enter into competition with similar goods manufactured at home. This principle is the basis of "Protection."

These general laws of nations relating to Trade and Commerce, like all other laws, are modified from time to time to suit the circumstances and condition of each nation.

There is no general principle governing the commercial policy of all nations, consequently the comparisons between the Tariff of one nation with that of another, are of no force or value. For instance, Great Britain, till 1844, levied an almost prohibitory tariff on grain as a "protection" to her agricultural interests, because the value of labor and land at that time caused the production of breadstuffs to be too expensive to sustain competition with those raised on the cheap lands and by the cheap labor on the continent of Europe. But the immense development of the manufacturing interests of England between 1830 and 1844 caused an entire revolution in its commercial policy, because the supply of home-produced breadstuffs was found to be unequal to the consumption by the rapidly-increasing manufacturing classes. England being an island of much smaller dimensions than single counties in this Sate, Sir Robert Peel, the then Premier of that country—a man of extraordinary sagacity—perceiving that it would be impossible to increase the agricultural resources of the Island by Protection, and convinced that England's hope was the development of her manufacturing interests, introduced the famous "Corn Laws," the passage of which opened the markets of England to the grain producers of the world. This measure was as much "Protection" to England's manufacturing interests, as the Tariff of the Federal Government is to our manufactures, because it insures the manufacturing classes of that country a steady supply of cheap food, without which its manufactures could not be sustained.

England also admits, free of duty, all descriptions of raw materials required for manufactures, which is another form of "Protection." But that country collects nearly as much revenue from the tobacco imported from the United States as the United States derives from the Tariff on all the manufactured goods imported from England.

Each nation collects its revenue from sources best suited to the circumstances of its people. The United States, with its immense dominions, undeveloped resources and rapidly increasing population, must protect its manufacturing interests in a manner differing from that adopted by England, because the circumstances of both peoples and countries are dissimilar.

The Federal Government wisely acts on the principle that those who compete with our home manufacturers must bear a portion of the expenses of the Nation, and exacts this payment through a tariff, *which compels foreign manufacturers to pay the difference between the wages paid for labor in this country and in Europe.* The tariff is a greater protection to American labor than any other power, except the ballot.

The policy of the United States Government, from the inception of the Republic, has been "Protection to American Industry." To secure this end "a tariff" has been adopted by every political party which has been entrusted with the administration of the Government. Each has levied duties on foreign imports, both as a protection to home interests and for purposes of revenue. "The Tariff," therefore, owes its origin to neither of the great political parties of to-day. It is the embodiment of the matured will of the people, as the means by which their home and foreign trade and commerce can be regulated, and should be as independent of politics as religion, sunshine and personal freedom. In the early days of the Republic, when its manufacturing interests were in embryo, and the expenses of government insignificant, the tariff on imported goods was nominal. As the enterprise of the people de-

veloped, and the resources of the Republic increased, its infant manufacturing interests required "protection" from the powerful competition of older and wealthier countries.

The wisdom of the founders of the Republic led them to perceive that levying a duty on the goods which came in contact with those made at home, in the home markets, was the best means to protect American industry, because the revenue thus derived has the two-fold advantage of insuring a better price for home manufactures and compels the importer to pay a share of the expenses of the Government, and thus lightens the burden of taxation on all classes of the people.

In the present condition of the national affairs, the foresight of the founders of the Government in their policy of a tariff has been the salvation of the Republic.

Through causes unnecessary to explain, the expenses of the Federal Government have become enormous, and must be paid.

The National debt, on July 1, 1871, amounted to $2,398,248,098, less $96,683,900 gold and $9,533,365 in currency. Of this debt, $1,888,133,750 is payable in gold, and bears $44,278,383 annual interest in gold.

The appropriations passed by the last Congress for expenses of the Government for the current year, exclusive of interest on the debt, amounted to $160,000,000.

To meet such enormous expenditures a corresponding revenue must be collected.

The question with the productive classes of the Nation should be: Shall this enormous revenue be collected wholly from us, or shall those who compete with us in the market for our labor pay as much of it as possible?

The policy of the party having control of the national affairs at the present time is "Protection to American Industry," by making importers of foreign manufactured goods bear the burden of taxation and pay it in gold.

This principle of the policy of the present Administration is clearly illustrated by the passage of the Act of July 14, 1870, which reduced the internal taxes on home industry $55,212,000 per annum. During the same session of Congress, nearly $100,000,000 was taken off import duties on articles necessary for the comfort of the working classes.

Any further material reduction in the Customs duties or tariff would be fraught with serious danger, for the following reasons:

As already explained, the gold interest on the Federal bonds, held chiefly in Europe, amounts to $44,000,000 annually. The product of the gold mines in the whole Union does not much exceed this amount. The latest report of the Federal Bank Commissioners shows that there is not exceeding $200,000,000 of gold in all the monetary establishments in the Union. It must be evident to every person of ordinary intelligence that if the payment of interest on the Federal debt to foreign bondholders nearly equals the receipts of gold from the mines, there can be no hope for a change in the present home taxation if foreign imports be, to any extent, exempted from paying their quota. This fact becomes additionally clear when we take into consideration that European capitalists hold $150,000,000 of American State and Municipal bonds, and nearly as much more of railroad and other corporation stocks and bonds, payable, capital and interest, in gold by the people of the United States. The country would be thoroughly drained of its stock of gold in a short time should the Government reduce the supply received through the Customs duties or tariff. In the event of such a misfortune, the Federal Government and the issuers of these bonds and stocks, held in Europe, would be compelled to enter the markets of that country as buyers of gold with which to pay the interest on their indebtedness; such a necessity would entail a heavy load of additional taxation on the productive resources of the country, and place our home manufacturing interests at the mercy of foreign competition.

It is sheer deception to make a distinction between duties levied on imports, for revenue, and those intended for protection. It is self-evident that

if the present tariff be required to meet the current expenses of the country, any reduction, under the pretence of encouraging "free trade," would reduce the revenue to a corresponding extent.

For instance: To remove the duties on wools and woolen goods would save the foreign manufacturers and importers $24,000,000 annually, but it would impose an equal amount of taxation on the productive resources of the American people.

The reduction of duty on imports is of much less advantage to the people than it is to importers. As already stated, the last Congress took the duty off nearly all kinds of drugs, coal, salt, and 40 per cent. from coffee and tea, and many other articles. The price of none of these articles is lower to the consumers. The whole amount of the reduction goes into the pockets of the foreign producer and importer.

The condition of this State, as presented in this Essay, illustrates the effects of encouraging importers. The imposition of a tariff averaging 50 per cent. on the value of manufactured goods imported from Europe is not sufficient to keep such goods out of this market. Would it improve the condition of our manufacturing interests to remove the existing barrier that prevents our being flooded with such goods, by reducing the tariff?

Why have so many millions of the working classes of Europe flocked to our shores? To improve their condition by the increased value of their labor here. This increased value depends on a protective tariff. Remove this tariff, and the condition of the working classes in the United States would be worse than that of the same classes in Europe; because, in such an event, all the manufacturing industries would be destroyed in this country and increased in Europe, where labor would be in demand; while here the working classes would be confined to "hewers of wood and drawers of water," because all they could produce, above what would be required to sustain a miserable existence, would be barely sufficient to pay for manufactured goods imported from abroad, which would be much dearer than at present, because there could be no competition in the home market.

Of what avail would be organizations for shortening the hours of labor, or for improving the social and intellectual status of the working classes—results on the success of which depends the permanence of the Republic—were it not for a protective tariff? Taxes and "tariffs" are indispensable adjuncts of civilization. They should be levied so as to press as lightly as possible on the producing classes. If the Customs duties favor importers more than the home producers, and the Nation imports more than it exports, and the imports be manufactured goods while the exports are raw materials, National bankruptcy is inevitable; because nations, like individuals, when they expend more than their incomes, must ultimately become insolvent.

Customs duties are a voluntary tax which any citizen can, to a great extent, avoid paying by purchasing goods of home manufacture or production.

A Protective Tariff is of far more advantage to the working classes than it is to capitalists. Granted that the capitalists of the Atlantic States engaged in manufactures obtain a large profit on their money through the influence of such a tariff, does not their money furnish employment to millions of mechanics, artisans and laborers, and tend to make the Republic independent, wealthy and powerful? Look at home here in California, where capital is not employed in manufactures, where there are not half a dozen first-class manufacturing establishments in one of the greatest States in the Union, and a large proportion of the sparse population is out of employment. Does not capital employed in speculations and combinations which oppress the working classes make larger profits than in any other State in the Union?

Is it not better for the working classes to encourage the employment of capital in manufactures, by a protective tariff, than it is to drive it into speculative enterprises, such as would follow "Free Trade?"

The larger the profits of capital employed in the development of the State's resources, the better is the condition of the working classes. It is because the profits on capital employed in manufactures in this State do not equal the profits on imports and speculative combinations, that those who have invested

heir capital in factories and machinery are compelled to resort to the cheap labor of the Chinese, to cut down expenses. There is not a manufacturer in the State but would prefer to employ white men and women did the expenses of his business permit it.

Capital has rights as well as labor; each is bound to protect its own interests.

It is only when capital is used in combinations to increase the cost of food, clothing, traveling or any other of the necessaries of life, or of business, or is employed in wild speculations, which prevent its use in productive industry, that it become antagonistic to labor. But these are matters not affected by either "Tariff" or "Free Trade."

WHAT WILL AID IN DEVELOPING THE MANUFACTURING INTERESTS.

From the facts and figures presented in this Essay, unless its author's views be altogether erroneous, the remedies for the evils under which the manufacturing interests of the State are laboring will suggest themselves:

A cheaper and more abundant currency, the establishment of National banks, and the conduct of our business in the same currency used by our competitors on the Atlantic Slope.

A material reduction in the rate of interest on capital employed in productive industry, which cannot be accomplished unless the National currency and banks be established.

A reduction in the general expenses of trade as nearly as possible to the level of those existing in the Atlantic States. This will follow the assimilation of the currency and interest.

The employment of the funds of the savings banks in safe and legitimate business and in manufacturing enterprises.

The organization of co-operative associations, through which the wealth created by the labor of their members shall be employed to increase the demand for such labor.

NCLUSION.

In concluding this brief Essay on the most important questions of the day, the authors desire to call the attention of the working classes of the State to the importance of the great principle of co-operation or unity of efforts. This principle, one of the most valuable of the results of popular education and human freedom, is destined to work a grand revolution in the condition of the people of this free Republic. Though its power is but partially understood by those cultivating its influence, it already exercises a salutary prestige in shaping the policy of the governments of all nations. This power, when thoroughly understood, must become omnipotent among a free people.

Great principles are always slowly evolved. The germ of this principle of "unity of efforts," though so recently implanted that its leaflets are scarcely above the surface of events sufficiently to attract general attention, is already a mighty power in the hands of the oppressed masses of Europe.

What will such a power be unable to accomplish in behalf of the rights of labor when this germ shall have become a majestic tree, with its roots deeply set in the congenial soil of this Republic, consecrated to human Liberty, and its broad leafy branches spread wide in the atmosphere of personal, political and religious freedom !

The present influential position of the Mechanics' Institute of San Francisco—through the liberality of whose members this humble Essay and its competitors were called into existence—is a suggestive illustration of the benefits an entire State derives from the intelligent, honest co-operation of its working classes.

This Institution, through whose instrumentality is to-day presented the unique picture of the artisans of the Occident and the Orient submitting the products of their skill, taste and industry for the approval and edification of the people of California, is the result of honest, intelligent and persistent unity of effort on the part of a few far-seeing mechanics, who take an earnest interest in the cause of labor.

The manufacturing interests of the State are more indebted to these gentlemen for their present development than they are to the combined capital of our wealthy citizens.

The present exhibition of the capabilities of California as a manufacturing State and of the variety of its resources, which has attracted thousands of keen, shrewd observers whose influence, like "bread cast upon the waters, will return after many days," is due to the hearty and honest unity of effort of the members of the Mechanics' Institute of San Francisco.

These gentlemen are entitled to the gratitude of the people of the State and of their

Very humble and obedient servants,

WM. GOUVERNEUR MORRIS.

H. C. BENNETT.

AN ESSAY

ON THE

BEST SYSTEM FOR ECONOMICAL

TRANSPORTATION OF ORES,

MINERALS AND GOODS

Over Mountainous Places and Difficult Roads,

AND ITS

APPLICATION MORE PARTICULARLY TO

CONVEYING THE PRODUCTS OF THE MINES

TO THE MILL.

BY DAVID R. SMITH.

THE BEST SYSTEM

FOR

THE ECONOMICAL TRANSPORTATION OF ORES,

MINERALS AND GOODS

OVER MOUNTAINOUS PLACES AND DIFFICULT ROADS.

A Roller skate weighing 2½ lbs. carries with safety a man weighing 150 lbs.

Weight of carriage or car in this case is to weight of load as 1 is to 60.

An ordinary 4 feet 8½ inch guage double track railroad car weighs 10 tons and its load is 10 tons or weight of car to weight of load as 1 is to 1.

The narrower the guage of a railroad, the lighter will the cars be in proportion to their load.

The narrower the guage the sharper the curves may be. These two facts demonstrate the superiority of narrow over wide guage railroads for conveying ores, at least in cost of construction and probably in economical working.

Excessively steep grades for railroads are not economical, for the reason that the weight of the locomotive increases and its useful effect or power applicable to moving the load decreases with every increase in the grade, and in mountainous places the earth-work necessary for grading for a railroad would frequently cost more than the mine or mill owners could afford to pay; and in many places the nature of the ground is such that a railroad or tram-way is entirely out of the question. Hence the necessity for the invention or employment of some more economical system applicable to such places.

This problem is solved by the employment of rope-ways suspended upon posts, spanning chasms, rivers and gorges, and passing over mountains.

With the rope-way no grading is required.

Probably at this time a hundred lines of suspended rope-way are in successful operation in different parts of the world, in the United States, England, South America and India.

The rope-way passes at one stretch or span over a gorge or gulch, that half a million of dollars would neither fill, grade nor bridge, with the same facility that it passes over level ground.

Where the ordinary overland telegraph can be placed, there can the rope-way be located.

An ordinary suspension bridge is a familiar modification of a rope-way employed in combination with railroads, wagon roads or foot-paths for conveying goods or passengers across chasms or gorges "without change of cars" or vehicles.

A second modification consists of the employment of a rigid or semi-rigid track fastened to the extremities of transverse arms attached to posts, said track consisting either of rigid continuous rails of wood or iron, or of wire rope stretched very tight and supported by a series of hooks or suspension rods attached to an upper rope stretched from post to post above the first rope or rail, said hooks or suspension rods being so curved or bent as to permit the free and unobstructed passage of the traveling wheels of a hanging car or bucket over any number of points of support, and consequently through any required extent of country.

The wheels traveling thus in line are held in position by pending iron bars or suspension rods, which extend downwards on the outer side of the lower cable or bar or track, and connect to the body of the car in such a manner as to bring the centre of gravity of the car directly under the lower cable or track.

These modifications require as great a number of parts as the suspension bridge and is hardly more suited to an extended line than the suspension bridge would be, but it has its place and proper application for long spans in connection with modification No. 3.

Modification No. 3 dispenses with the upper cable or rope, and curved or bent suspension rods, for supporting the track, and the track consists simply of a rope or wire stretched between fixed supporting points, the supporting points being arranged, as in modification No. 2, in such a manner as to offer no obstruction to the passage of the traveling wheels.

Both with modifications Nos. 2 and 3, the only known practicable method of propulsion is by means of a traveling rope attached to the cars or bucket.

To obtain the greatest result with modifications 2 and 3 the propelling rope should be an endless wire rope, passing around grip or clip pullies, or plain grooved pullies, at the end of the route, power being applied to the grip pully when the force of gravity cannot be sufficiently utilized.

The track should also be continuous or endless.

The load may and should be distributed along the track, and no portion over-loaded, and a continuous stream of vessels, or cars, buckets, or carriages can be constantly transmitted in both directions as on a double track railroad.

This modification (No. 3,) has been subjected to ample practical tests and is in actual operation at this time in several places; but inasmuch as two ropes are employed, this (No. 3,) is more complicated and costly, and therefore not of as general application as modification No. 4, in which only one rope is employed, an endless running rope supported on pulleys or sheeves placed at the extremities of elevated transverse bars similar to those employed for carrying the fixed rope of modification No. 3. Upon this endless rope rest saddle-shaped carriers or hangers that should be provided with grips similar to those employed in grip pulleys. To these saddles the cars or buckets are suspended by rods so bent as to bring the centre of gravity of the load directly under the rope.

The saddle, with the cars attached, adhering to the moving endless rope, are carried along with it. With the latest improvements in switches and curves and other details, this modification is of more general application than either of those hereinbefore described and in many instances the best that can be adopted; but, for conveying the products of the mines to the mill under ordinary circumstances, over mountain places and difficult roads, modification No. 5 is probably the best that has yet been devised, and if so, is destined to be most generally adopted.

In modification No. 5, the cars or buckets are suspended by means of curved or bent arms secured to hangers or arms projecting from and permanently attached to an endless moving rope, said hangers or arms being generally made of steel and secured by a thin steel band clasping the rope.

The hanger or arm with the pendant car or bucket passes readily and without difficulty all the pulleys around or over which the rope may lead, and admits of the placing of a pully or other guard over the bearing sheeves to prevent the escape of the rope from the groove of said bearing sheeves.

Among the advantages of the employment of the endless moving rope-way as hereinbefore described are :

First. The steam engine or other motor employed being stationery, does not expend any of its power in moving itself.

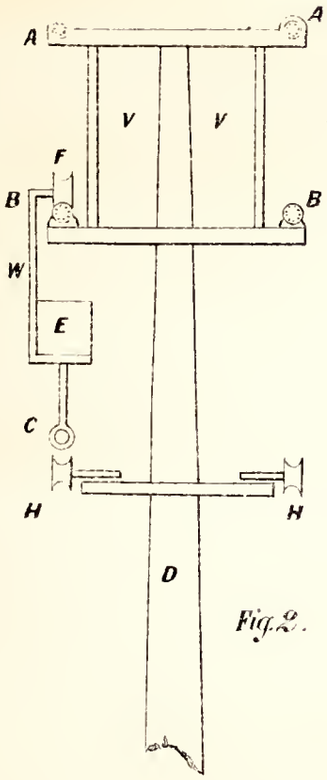


Fig. 2.

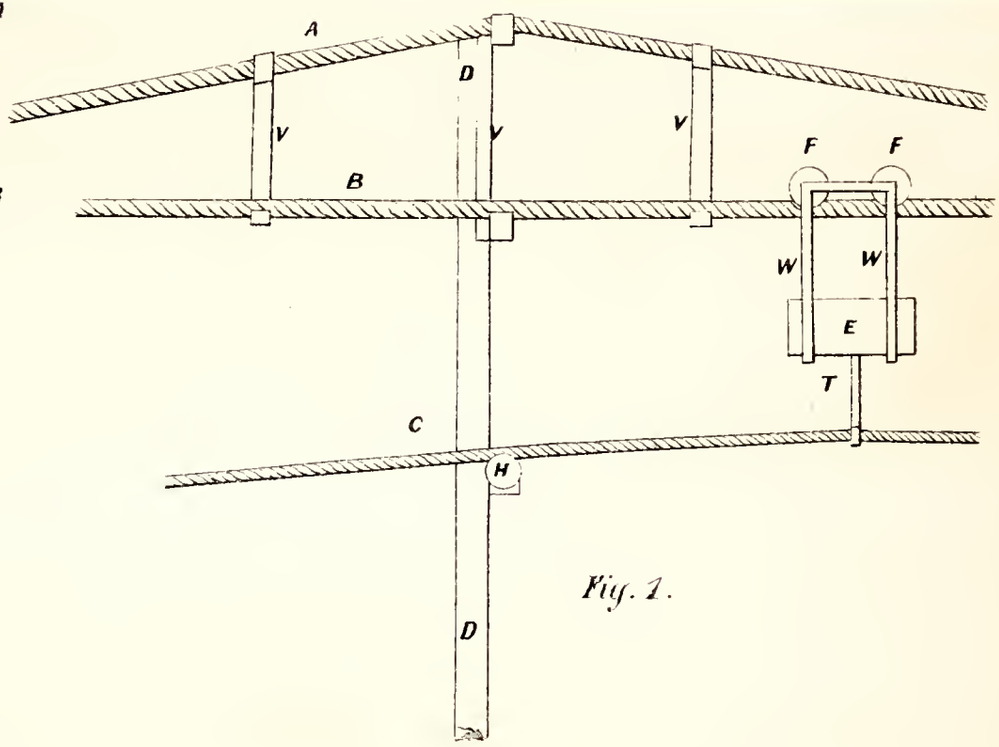


Fig. 1.

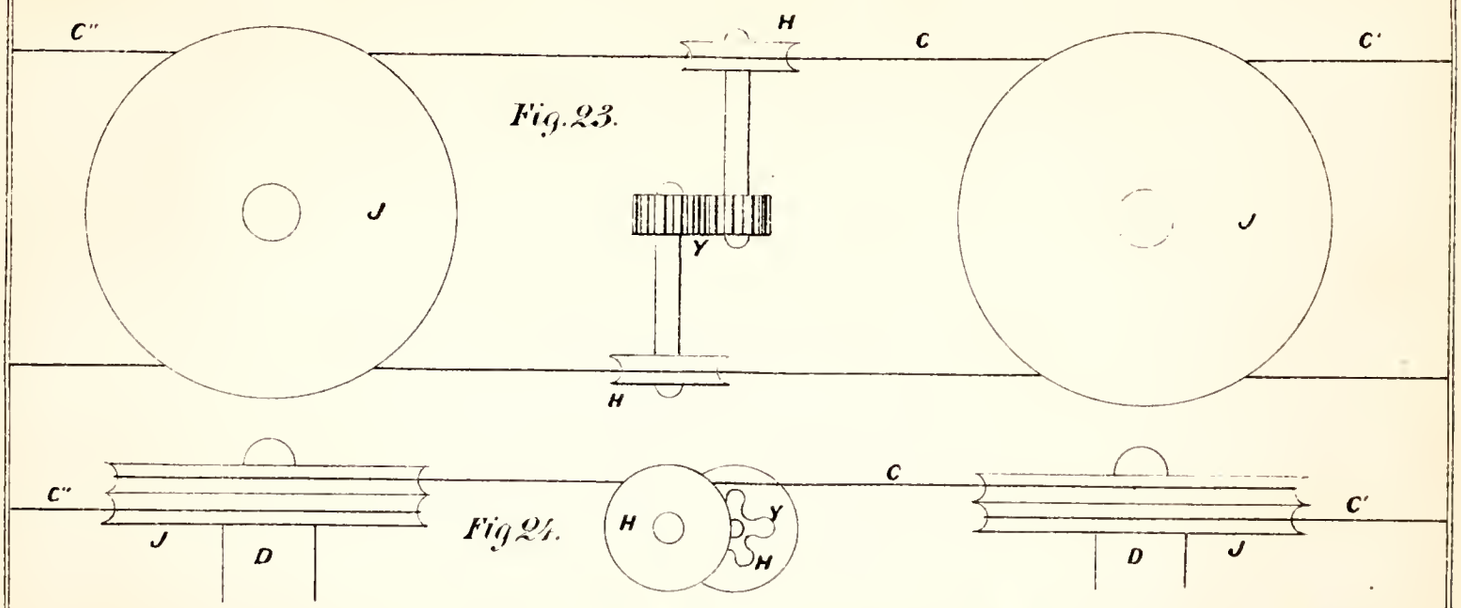


Fig. 23.

Fig 24.

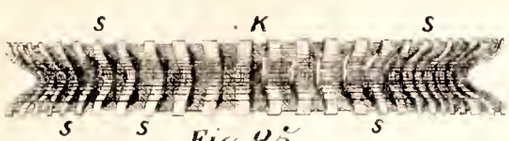


Fig. 25.

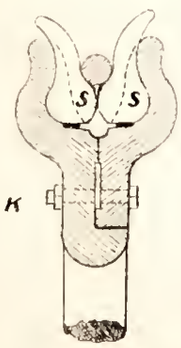


Fig. 26.

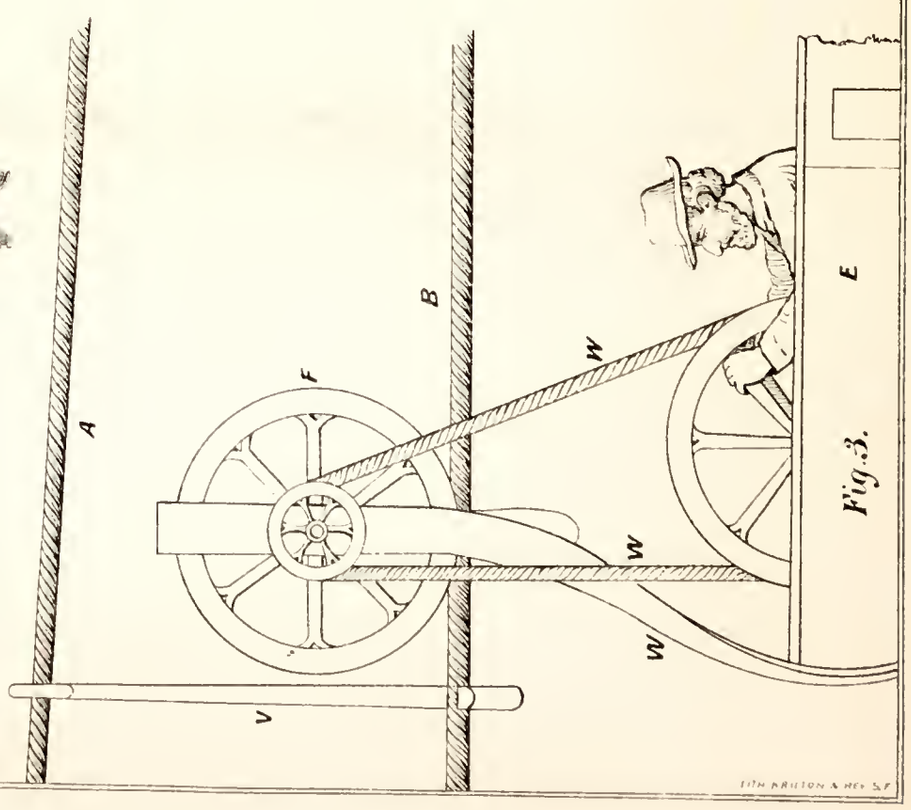


Fig. 3.

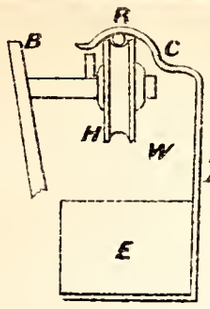


Fig. 14.

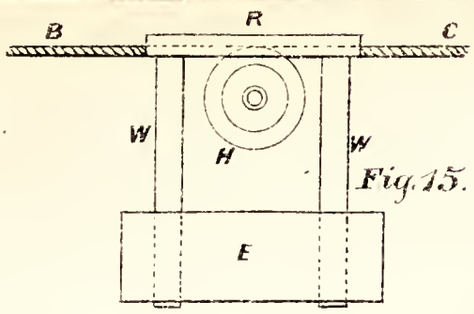


Fig. 15.

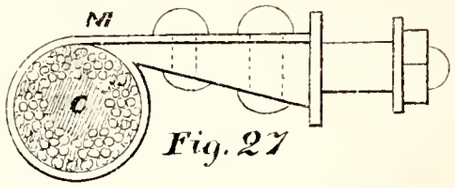


Fig. 27

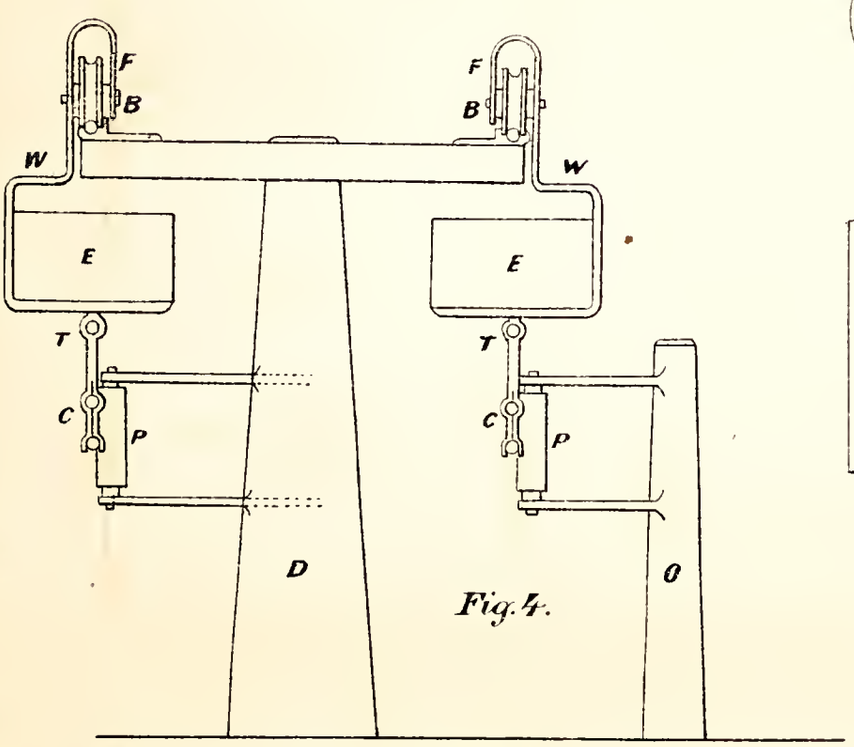


Fig. 4.

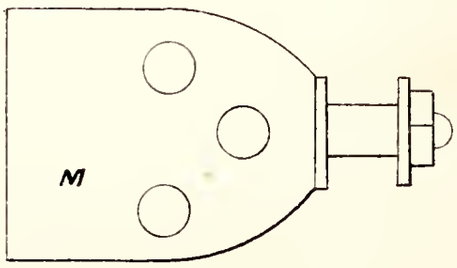


Fig. 28.

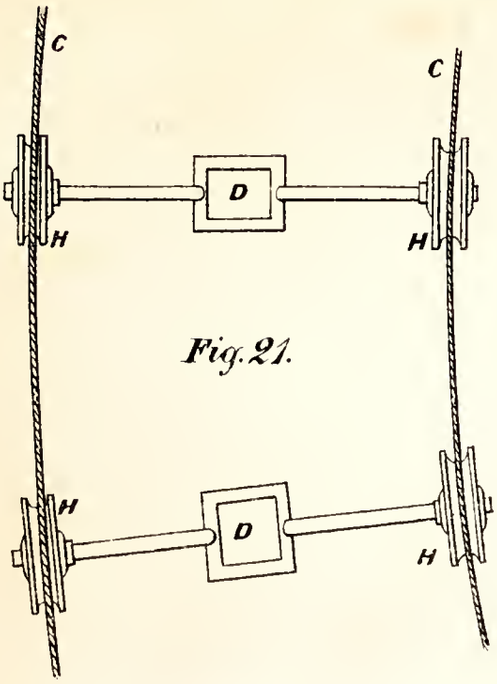


Fig. 21.

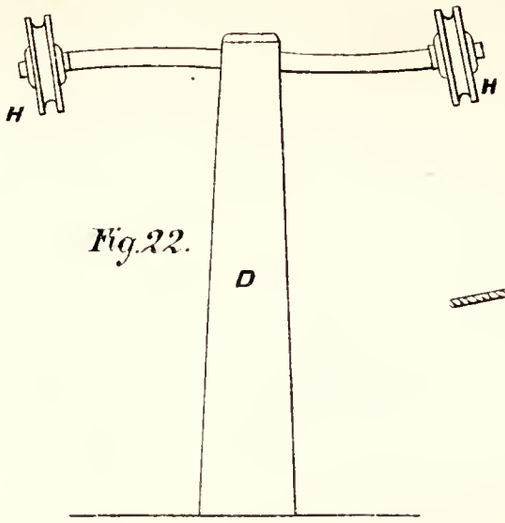
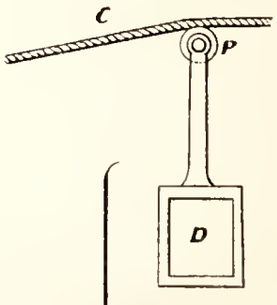


Fig. 22.



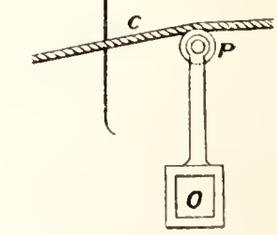


Fig. 5.

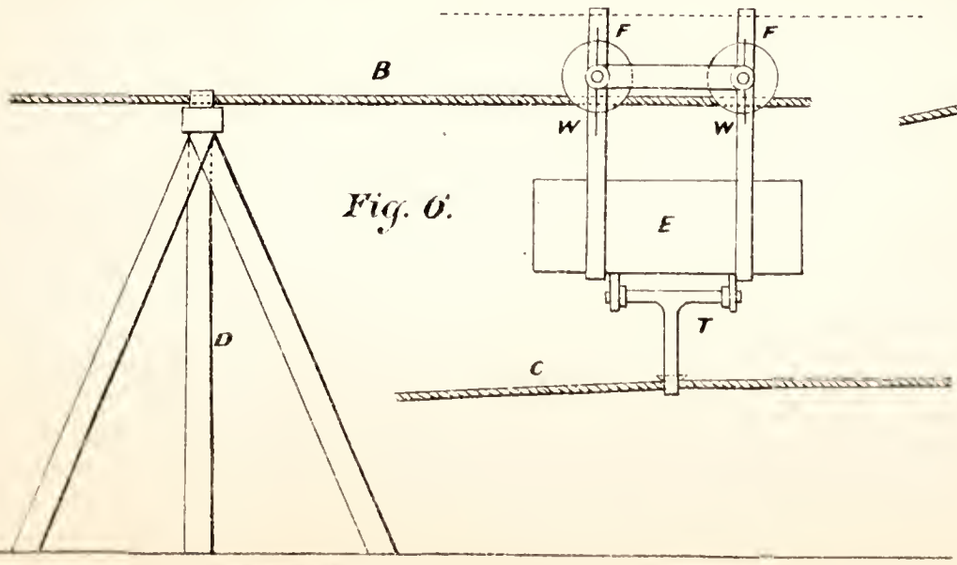


Fig. 6.

LITH BRITTON & REYS F

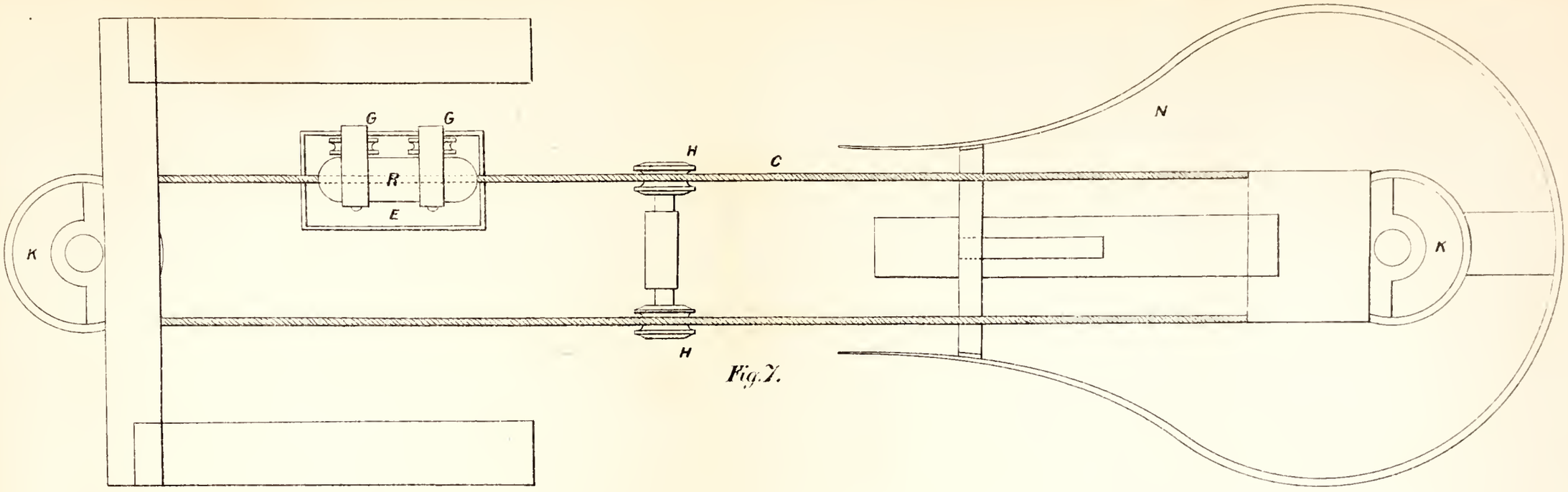


Fig. 7.

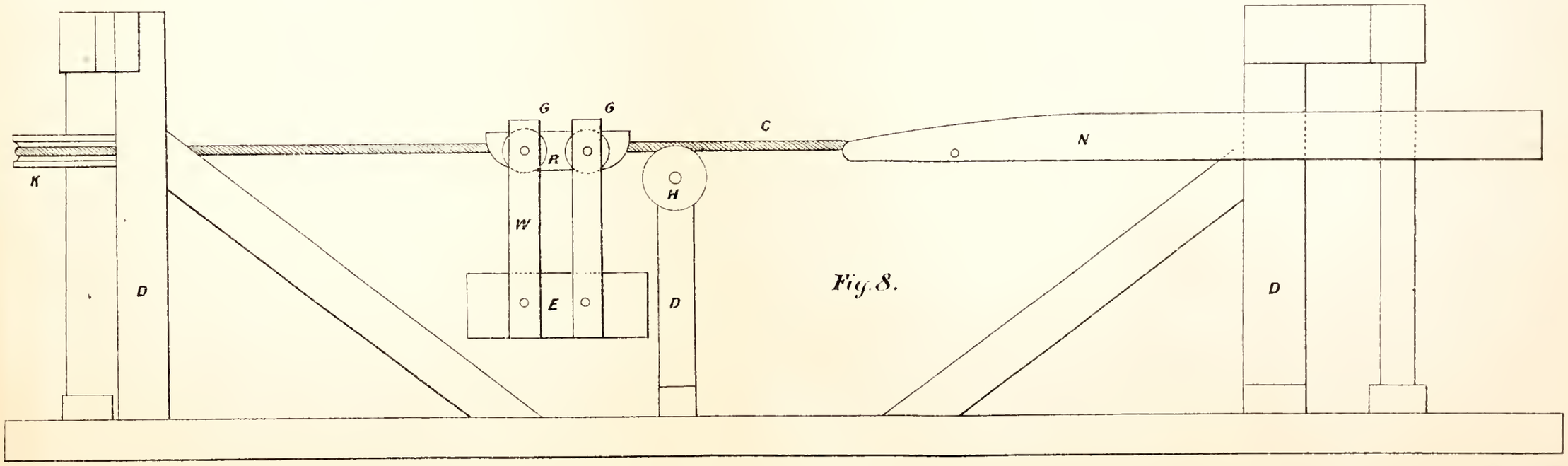


Fig. 8.

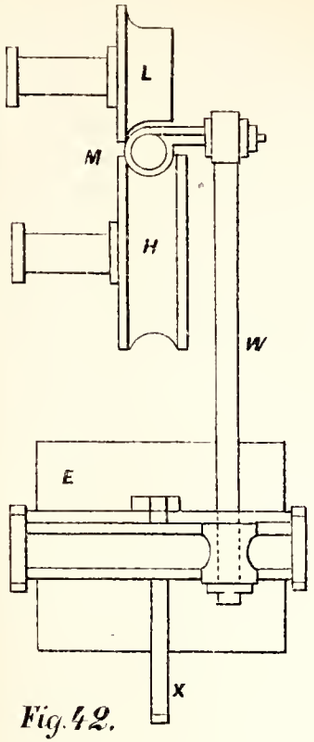


Fig. 42.

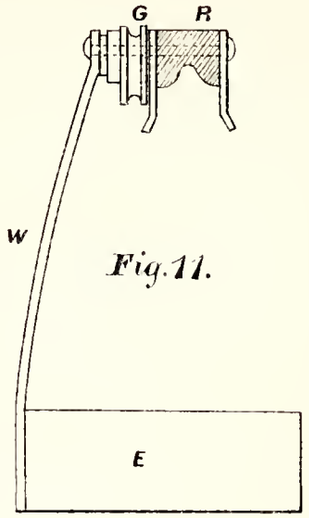


Fig. 11.

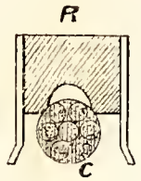


Fig. 12.

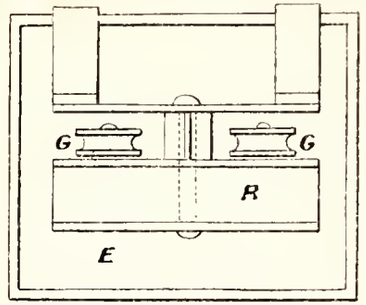


Fig. 13.

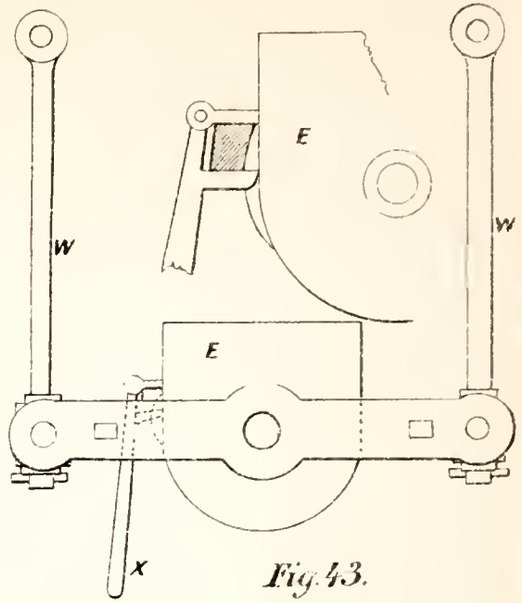


Fig. 43.

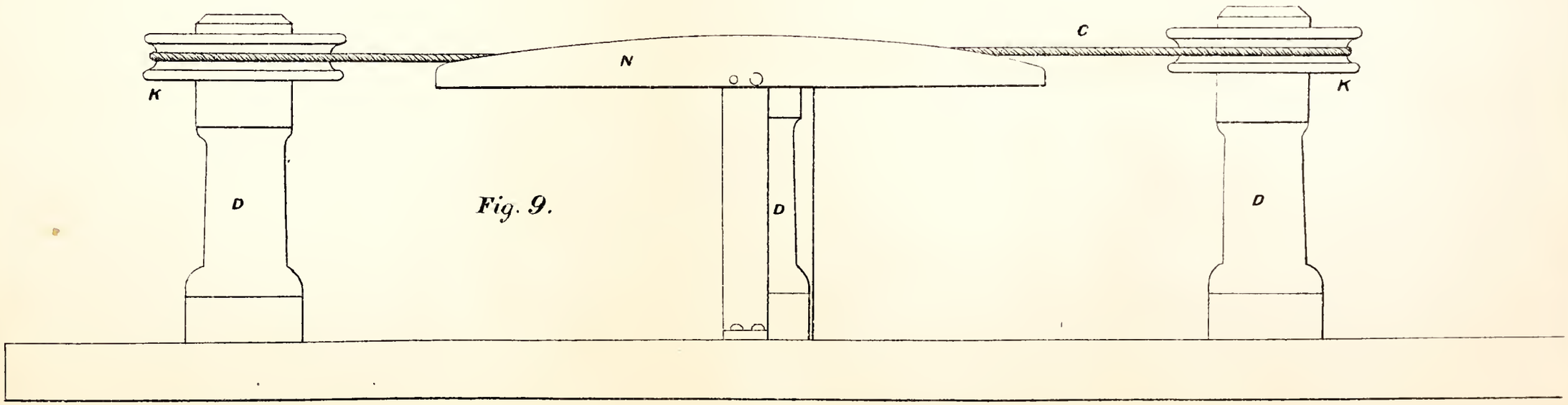


Fig. 9.

LITH. BRITTON & REY. S. F.

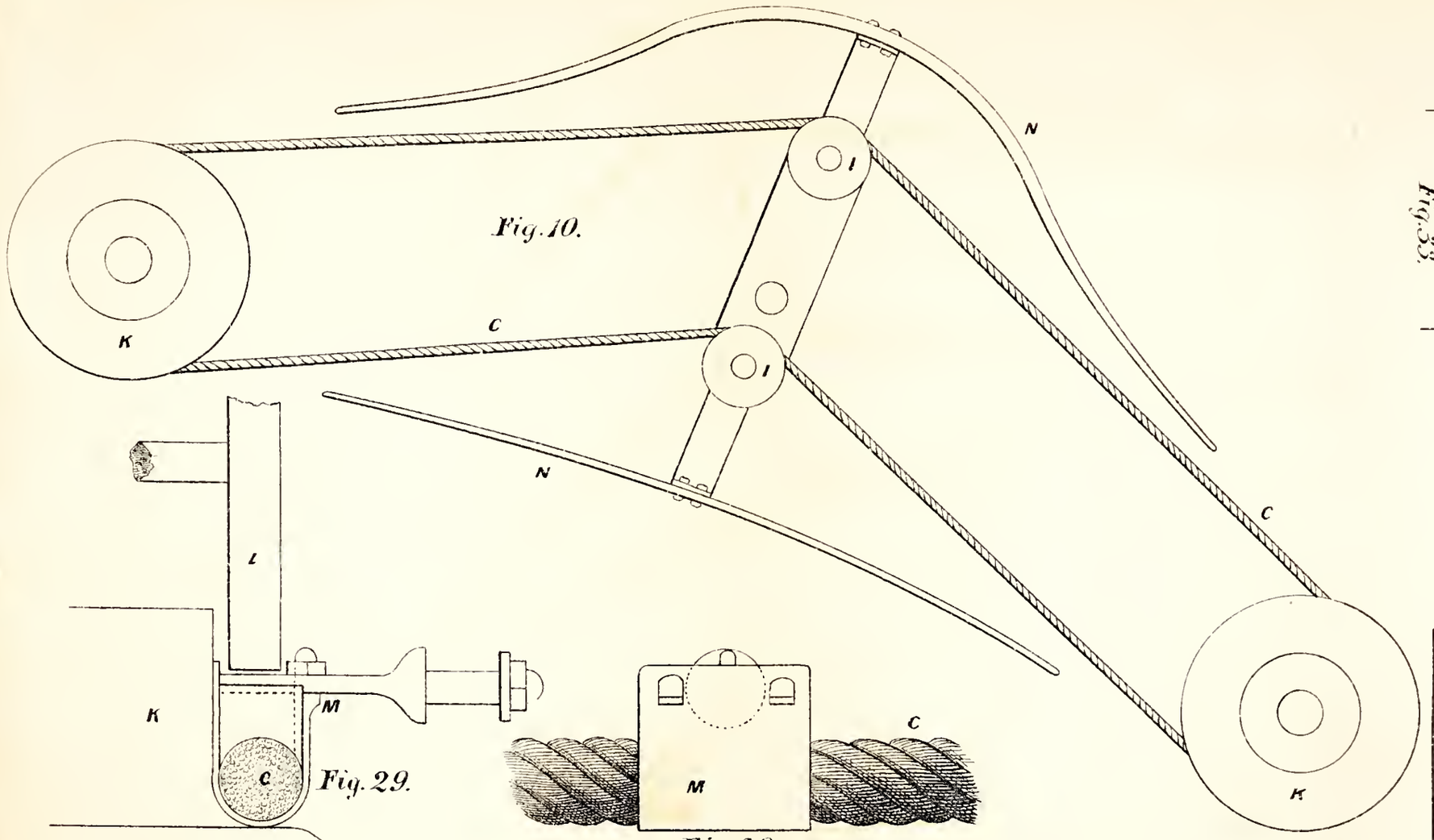


Fig. 10.

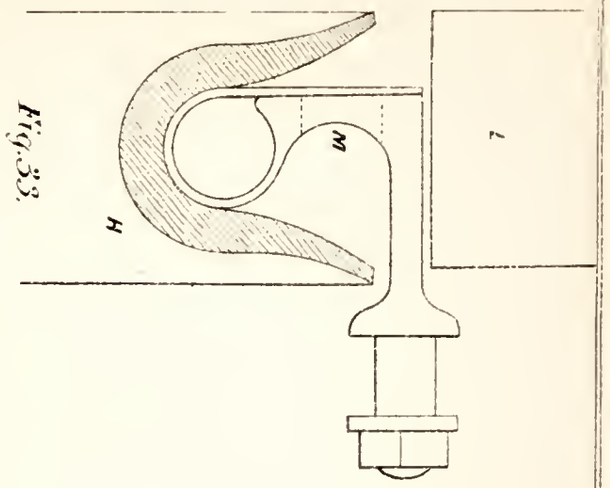


Fig. 33.

Fig. 29.

Fig. 30.

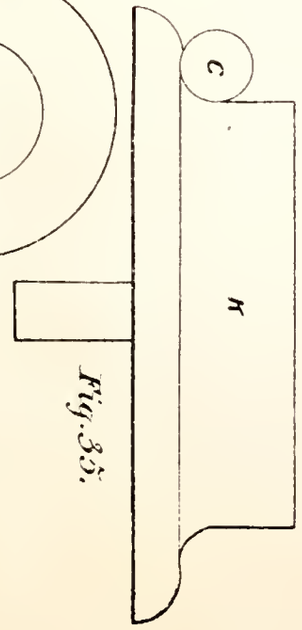


Fig. 35.

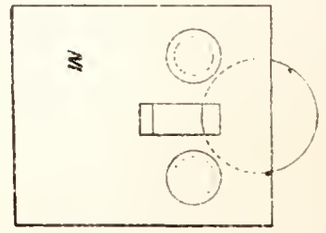


Fig. 34.

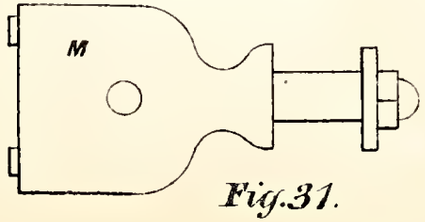


Fig. 31.

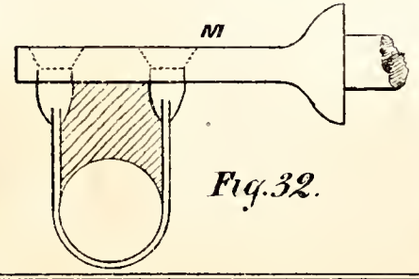


Fig. 32.

LITH. BRITTON & REY S.F.

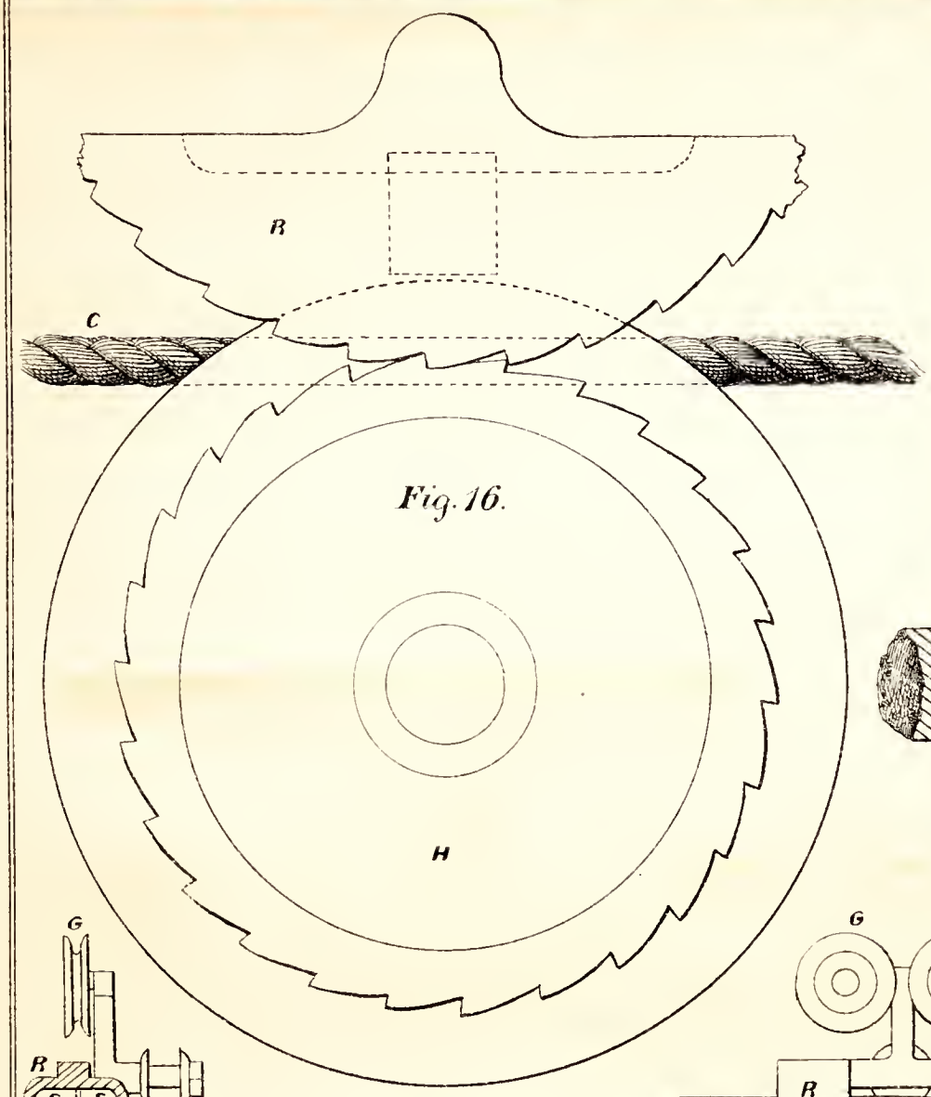


Fig. 16.

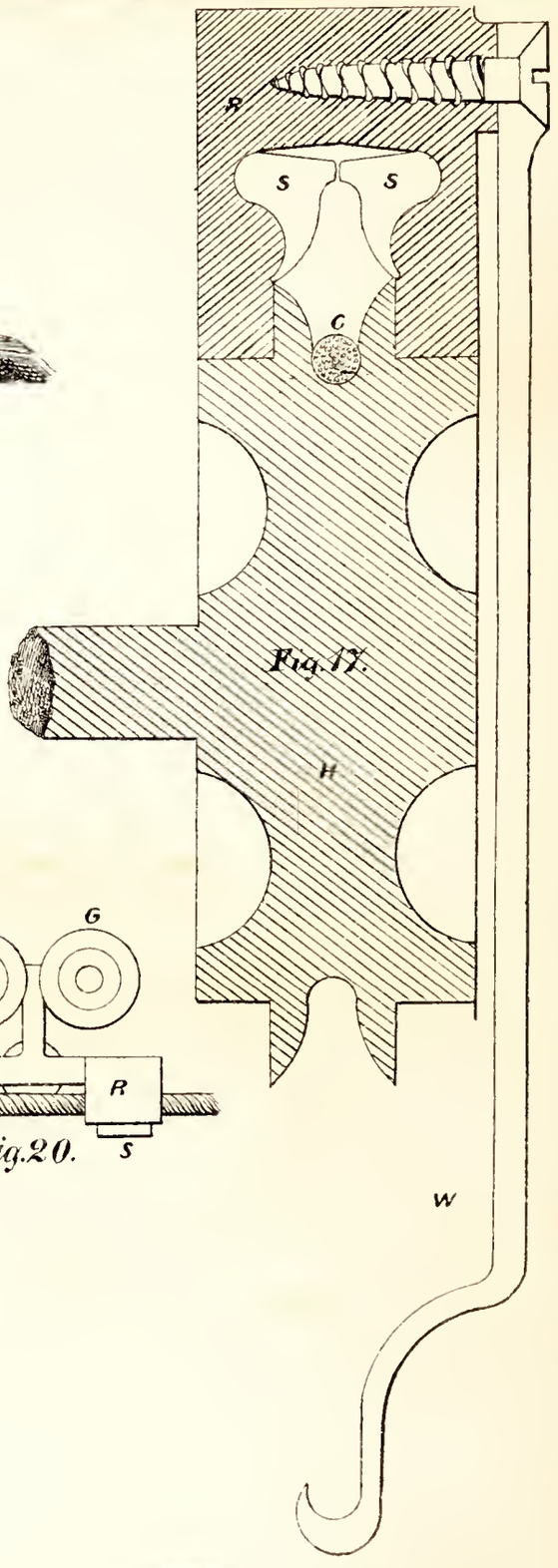


Fig. 17.

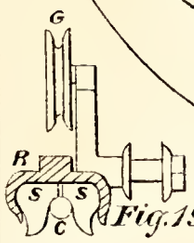


Fig. 19.

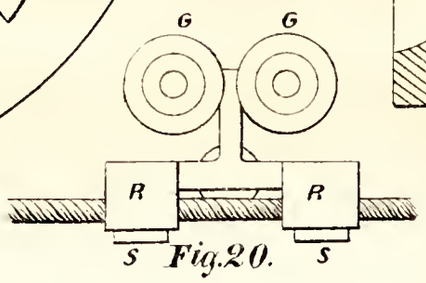


Fig. 20.

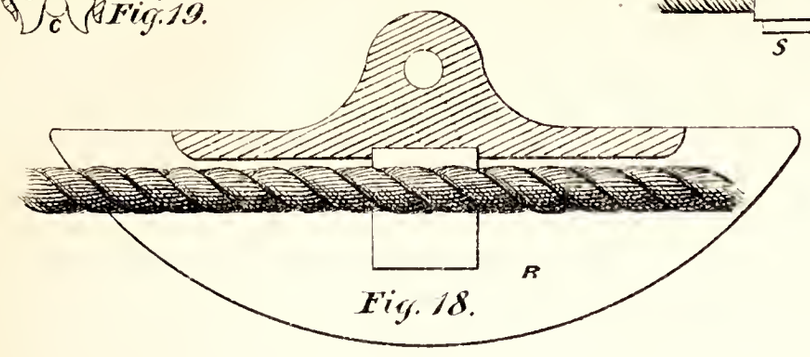


Fig. 18.

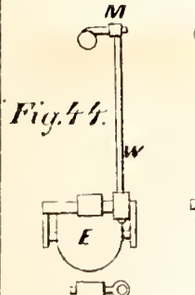


Fig. 44.

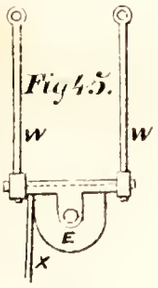


Fig. 45.

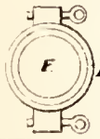


Fig. 46.

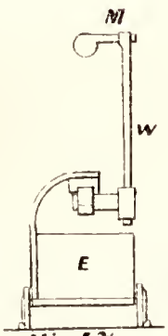


Fig. 47.

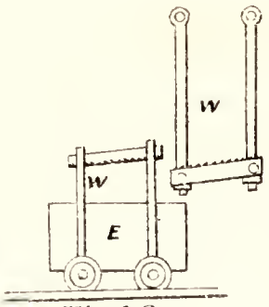


Fig. 48.

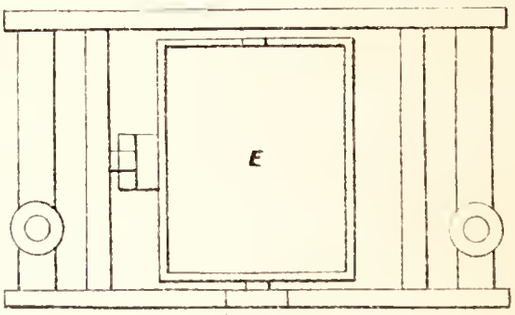


Fig. 41.

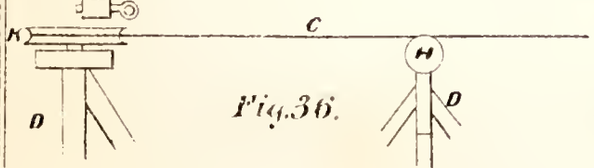


Fig. 36.

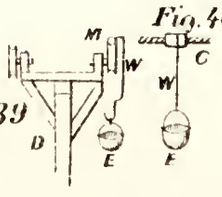


Fig. 40.

Fig 39

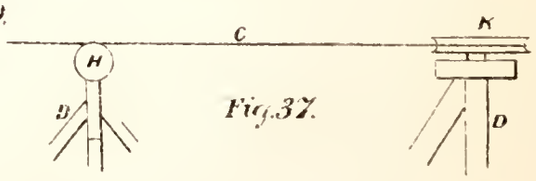


Fig. 37.

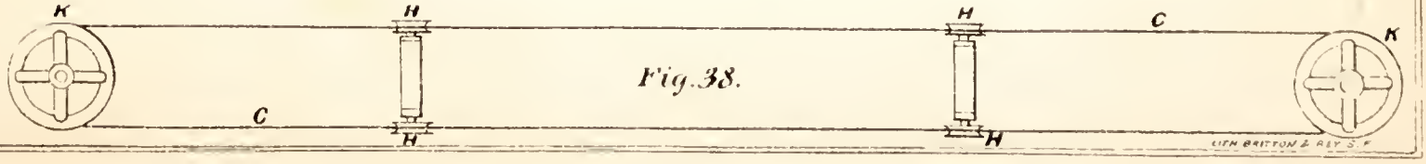


Fig. 38.

SECOND. The cars or buckets being all connected together (by the rope,) require the same power to propel them over heavy as over light grades, over a mountainous as over a level country.

THIRD. When any considerable proportion of the freight is discharged at a level lower than that at which it is received, a corresponding part of the power required may be derived from the weight of the descending freight.

FOURTH. If the descent is very considerable the unbalanced weight of the descending loads will furnish power that may be applied to other useful purposes.

FIFTH. The operation being continuous, and minerals or ores being a suitable freight for a ropeway, a very large amount of ore can be cheaply and economically transported by ropeway, when almost any other kind of transportation would be impracticable.

A well-constructed endless ropeway costing $5,000 per mile, may transport in twenty-four hours 800 tons of freight from any given point on the line to any other given point on the line; but 300 tons would be about the proper practicable amount for such a line, for constant work, every twenty-four hours.

By the aid of drawings, the details of construction can be more readily described and comprehended.

Each part is distinguished by the same letter whenever it appears in the several drawings hereunto annexed.

A is the upper rope sustaining the rope or track, B, by means of the suspension rods, V. C is the endless running rope by which the cars are moved. D are the posts for sustaining the ropeway. E is the car, bucket or carriage. F are wheels from the axles which the car E is suspended when the rope B is employed. G are similar pulleys attached to the saddle used in connection with the endless moving rope C, when only the rope C is employed. H are the pulleys (bearing) or sheeves employed to support the rope C. I are horizontal grooved pulleys sometimes used at angles when only rope C is employed. J are double grooved pulleys employed on long lines to transmit the strain, and communicate power from one side to the other of the line at intermediate points, in order that light cables may be used proportioned in strength to the distance between the pulleys J, and without regard to the length of the line. K are the end pulleys generally placed in a horizontal position, around which the endless rope runs. L are pulleys placed over the grooves of pulleys H to prevent the escape of the rope C. M are hangers employed in the fifth modification of this system, permanently attached to the endless moving rope C, from which the cars or buckets are suspended. N are called shunt rails, and are placed near the rope C for the wheels G to run upon at such places as it may be desirable to disengage the cars from the rope as at the extremities of the line, at stations or at angles.

O are posts or supports, placed at the inner angle of the line to which the rollers P are attached. P are rollers placed at the angles of the line for the rope C to bend around when said rope C is attached below the car.

R is the saddle. S are the clips or grips used in the saddle R, and in the end pulleys K. T is an arm or hanger projecting below the cars to which the rope C is attached. V are the suspension rods by which the cable B is suspended from the cable A. W are the suspension rods by which the car E is suspended from the wheels F, hanger M or saddle R.

X is a trip, lever or arm connected with a spring or catch, and projecting below the car, when said cars are to be dumped or unloaded automatically.

Y are spur wheels connecting opposite pulleys H for the purpose of transmitting strain and power from one side to the other of the endless rope C.

Z is a rope or band or belt used to drive the wheel F by a revolving wheel in the car E.

Fig. 1 is a side elevation and Fig. 2 a transverse section of an arrangement embodying the hereinbefore mentioned modification No. 2, of the ropeway system of transportation, in which the rope A corresponds to the cable, the rods V to the suspension rods, the rope B to the roadway and the posts D to their piers and towers of an ordinary suspension bridge.

The cars E are propelled in this instance by the endless moving rope C attached to an arm projecting below the car. Fig. 3 is a representation of a similar line in which a man seated in the car E propels it along by turning a wheel connected by the belt or rope L to the pulley F.

It has been proposed to substitute for rope B a rigid rail, and for the man-power represented in Fig. 3, a steam engine.

A working line of elevated railway or tramway has actually been built somewhere, I believe, in which the rigid rail substituted for the rope B, instead of being suspended from the rope A, was supported entirely by posts D set in the ground, and the cars propelled by a steam engine contained in the car E and connected to the wheel F. Such an arrangement, although not a ropeway and too expensive for very general application, will, like others, be found to be exactly suitable for certain locations, and is therefore worthy of mention in this description.

To each post D, Figs 1 and 2, is attached a transverse arm supporting pulleys H for the rope C. At the angles of the line, rollers P are placed for guiding the rope C, as represented in elevation in Fig 4, and in plan in Fig. 5.

The elevated railroad or tramway just referred to, approximates more nearly to modification No. 3, hereinbefore mentioned, of ropeway system.

Said modification is further illustrated in Fig. 6 of the drawing. Fig. 6 will be understood at a glance, and therefore does not require further explanation.

Figs. 7, 8, 9, 10, 11, 12, 13 represent lines of ropeway, embodying modification No. 4, of which

Fig. 7 is a plan; Fig. 8 an elevation; Fig. 10 is a plan view, showing the side rails or shunt rails for passing an angle in the line. Fig. 9 an elevation of the same. Fig. 12, a cross section of block or saddle for grasping the rope. Fig. 11, a cross section of carriage and saddle. Fig. 13, a plan of same, showing one method of pivoting the suspension rod to the saddle.

To the saddle R are attached wheels G, that in passing around the end pulleys K, or angle pulleys I, run upon the shunt rails N, and lift the saddle, with car attached, off the rope, and carry it around the end pulley, angle pulleys or other obstruction.

Figs. 14 and 15 represent another proposed form of saddle.

Both forms of saddle above mentioned have been found to be liable to slip along the rope, particularly when near the point of support, where the inclination of the rope is greatest.

They are also apt to lodge or catch at the bearing pulleys and shunt rails, the momentum being insufficient to carry them over.

Fig. 16 is a side elevation; Fig. 17, a transverse vertical section of a saddle R and bearing pulley H; and Fig. 18, a longitudinal vertical section of same saddle, in which clips or grips S, are inserted, that grasp the rope when the weight is on the saddle, and releases it when the weight is removed.

The clips, or grips S, effectually prevent the slipping of the saddle along the rope.

The moving rope always resting in the groove of the pulley, keeps the pulley moving, and the teeth on the sides of the pulley engaging the teeth of the saddle, carry the saddle over and deposit it on the rope on the other side.

Figs. 19 and 20 represent a hanger, consisting of two saddles R, having the wheels G so attached, as to work on a shunt rail placed immediately above the rope.

When two saddles are thus connected, one of them may always be on the wire while the other is passing the highest point of the bearing pulley H, or shunt rail N, and all danger of lodging or catching at the pulleys H, or shunt rails, is thereby avoided. For sharp curves the connection between the saddles may be jointed, and each saddle may be provided with two wheels, G.

Fig. 21 represents a method of setting the bearing pulleys at angles or curves in the line. If the pulleys are placed vertically, and divide the angle, as represented in that figure, about ten or twelve pairs will be required to turn

an angle of 45° ; if the pulleys are inclined, as represented in Fig. 22, a less number will be required ; if the motion of the rope is never to be reversed, an angle of 8° or 10° may be made at each pulley without producing excessive wear on the rope—provided the rope leads fairly on to each pulley.

Figs. 23 and 24 represent the manner of employing the double grooved pulleys J, and the spur gear Y, for transmitting the power and strain from one side to the other of the ropeway for the purposes hereinbefore set forth. The device of the spur gear may be employed with the permanent hanger, M, in modification No. 5 of the ropeway system, and the pulleys J may be employed with either the permanent hanger M, or the saddle R.

Figs. 25 and 26 represent the grip pulley, which in this connection may be considered as the end pulley K, provided with clips or grips S.

The clips S, grasp, hold and release the rope, without injuring it, and all the friction required for conveying or communicating power by a rope is readily obtained by their employment.

Fig. 27 and 28 represent a form of hanger, M, suitable for employment with the grip pulley, or with an ordinary grooved pulley. If of steel, it can be made as strong as the rope without materially increasing the diameter at the point of attachment.

Figs. 29, 30, 31, 32, 33 and 34 represent forms of hangers M, suitable for use with the end pulleys K, represented in Figs. 29 and 35.

Figs. 36, 37, 38, 39 and 40 represent a line of ropeway, in which the hanger M, represented in Figs. 27 and 28, is employed.

Figs. 41, 42 and 43 represent, in plan and elevation, an automatic dump car, connected with the suspension rods and hanger M, with a peculiar arrangement of joints, whereby the car is not only retained in a horizontal position when in motion, but will readily pass the end pulleys and angles of the line. Figs. 44, 45 and 46, represent a circular car or carriage, embodying the same principles.

Figs. 47 and 48 represent a removable car. Floors or tracks may be so arranged at any designed point as to lift the car, by means of the inclined beams, on or off the line, and place it in position to be re-engaged at any other desired point.

One great objection to modification No. 4 is, that nothing can be placed over the bearing pulleys to prevent the escape of the rope from the groove. This difficulty is entirely obviated in modification No. 5, in which hangers, M, permanently attached to the rope are employed, as will be seen by reference to Figs. 29, 33 and 42.

Having thus described the leading and most important modifications of the system of transportation by ropeway, as adapted to mountainous places and to conveying the products of the mine to the mill, I will now refer in a few words to its history:

The idea of conveying goods, and even passengers, along a rope stretched between two points of support, as across a river or ravine, from a ship to the shore or from the shore to the ship, is very old indeed ; and even the idea of a continuous fixed line of ropeway, extending for an indefinite distance overland, seems to have been familiar to the minds of many inventors and engineers for a long time, and to have been insensibly perfected in all the details connected with the passing of a car along a fixed rope, and the supporting of said rope on posts, without having attracted much attention.

It was not until after the combination of the saddle R, pulleys G, shunt rail N and pendent car E with the endless moving rope C, as represented in Figs. 7, 8, 9, 10, 11, 12 and 13, invented by Charles Hodgson of Richmond, England, and patented in that country in January, 1869, had been in successful operation in many places, that the endless ropeway began to take its place as an economical system of transportation, of general application in mountainous places.

The drawing, Fig. 3, is copied from a design by Walter Hyde, of New York, for some of the details of which he obtained letters patent of the United States, dated February 8, 1870.

The hanger M, in all its varieties and combinations, is the invention of Mr. A. S. Hallidie, of San Francisco, Cal.

The improved saddle with teeth that engage teeth on the bearing pulleys H, the clips or grips S, the double-saddle, the grip pulley and other improvements hereinbefore described, are also the invention of Mr. Hallidie, for all of which he has obtained patents of the United States.

The same gentleman has also patent applications pending for a most perfect combination of devices for the angles and curves of lines of ropeway, and other valuable improvements, the exact nature of which I am not at liberty at this time to describe. Although one or two of the improvements herein described were invented by myself, I have endeavored in this Report, or Essay, or article, or whatever it may be called, to confine myself to a faithful description of the system or art as it at present exists, and to avoid entirely introducing speculative or theoretical ideas of my own. Neither have I attempted by an imposing array of figures or by an extensive comparison wsth other systems, to prove that the herein-described system is the best; but have contented myself with the simple statement of how much ore or mineral a line, costing $5,000 per mile, could transport, leaving the Committee appointed by the Institute to make all necessary comparisons to enable them to decide whether the same freight could be transported over mountainous places as economically by any other system.

DAVID R. SMITH.

ESSAY

ON THE

BEST SYSTEM

FOR

CLEARING AND CULTIVATING

TIDE LANDS.

BY A. J. BIGELOW.

BEST SYSTEM

FOR

CLEARING AND CULTIVATING

TIDE LANDS.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—The system of reclaiming overflowed lands, which I shall attempt to advocate, although having proved successful where I am located, I can readily see may not be equally applicable to other sections of the State. All I claim is, that it is peculiarly adapted to such lands as are overflowed by the spring tides.

The theories I propose to advocate, the opinions I may advance, or the facts I may give, are such as I have fully tested, and found successful during the past ten years.

A large portion of the overflowed tide lands of this State are divided into islands, by sloughs, and these islands are to some extent intersected with sloughs.

The first thing to be considered in reclaiming said lands, is to bring the waters that flow through those rivers and sloughs that form these islands, or that border on them, under our control, so that they can be confined within their natural banks or be made use of in irrigating the land; and that can be accomplished by the use of levees and tide gates.

In order to make a successful reclamation, and at the same time economize in the expense, we should reduce the length of the levees to the least number of miles or rods possible, on the tract of land we propose to reclaim, thereby reducing the risk in the same proportion.

This can be accomplished by putting in good substantial dams in all the sloughs that are practicable to dam.

The location of the levees, except where the bank is bold and likely to cave in by the action of the current, should be just inside of the highest portion of the bank, which is indicated by the growth of the vegetation, alders and willows, that being more firm, as well as higher, than farther inland.

The location of the ditch, from which the material for building the levee is obtained, should be inland from the levee. This location is not usually considered of much importance; but, from my experience, I consider it is of the *greatest* importance to insure success. The turf or bank of the rivers or sloughs are very closely sealed against seepage with the deposit of sediment, which fact is easily ascertained by digging a hole in reclaimed land, a short distance from the river, where the overflow has been kept off for two years:

the water level, or standing water in the land will be found to be from two to three feet *below* the highest *tides*. The removing of this sediment exposes the porous turf to a much greater pressure of the water, causing much more seepage; and, when the water comes upon the levee, the pressure against it causes the levee to spring inland to some extent, and carries with it the bank. Where there is no cut in the turf, this giving is generally diffused throughout the whole turf of the bank; but, where the sod is cut, this giving or springing is concentrated to one point—the side of the ditch nearest to the levee—and many times opens a crack in the bank which will extend down below and under the levee, and break out inland, forming a communication for the water from the river or slough.

The size and shape of the levee would vary, in different localities, from twenty feet to thirty feet base—both sides of the levee sloped alike, eight or ten feet high, and four or five feet wide on top. The bench between the levee and ditch should be eight or ten feet wide, and where a road is required to run parallel with the levee or ditch, it would be well to leave a bench twenty-five feet wide, which could be used as a highway. The ditch should be four or five feet deep, and of sufficient width to afford the amount of material necessary to build the levee.

In building the levee, the turf should be laid up in two walls, forming the two sides of the base of the levee, and the softer portion of the material should be well packed in between the walls of turf, forming a case that will be impervious to water.

[See the diagram marked A.]

The flood gates should be hung in a flume five feet wide in the clear, and from twenty to thirty feet long, depending upon the base of the levee. There should be a drop gate in the inland end of the flume.

[See the diagram marked B.]

If the levees are sufficient to keep off the overflow of the river or sloughs, no general system of drainage will be required, except in lands that join high land, and have a large water-shed.

After a tract of land has become dry enough to burn from six inches to one foot deep, the turf should be fired, which can be easily done by the use of coal oil; and, as soon as practicable after burning, the land should be ploughed and thoroughly cultivated, when it will be ready to receive whatever seed you propose to put in. I have had good crops on new burnt land by harrowing thoroughly, or by tramping in the seed with sheep; but the ashes are very likely to be blown off the land and lost if the land is not ploughed after being burnt.

Another method practiced is, to let the land remain until the sod has become rotten, (which usually requires two or three years,) and then plough and cultivate it. It has been ascertained by experience that after the land becomes dry it settles, and in many places will leave a space of two or three inches between the settled soil and the turf above it, which is usually from one to two feet thick. It is very apparent that it will require a large amount of labor to reduce the sod, so that it will form a communication with the soil below; and if the connection is not formed, it is useless to put seed in this turf until it is reduced to a fine condition.

It has been asserted that the burning process is a waste of soil, and, consequently, renders the land lower; but experience demonstrates that there is no perceptible difference in the land after it has been brought under a good state of cultivation, whether done by a burning or rotting process; the saving of time and expense, we consider, is very much in favor of burning.

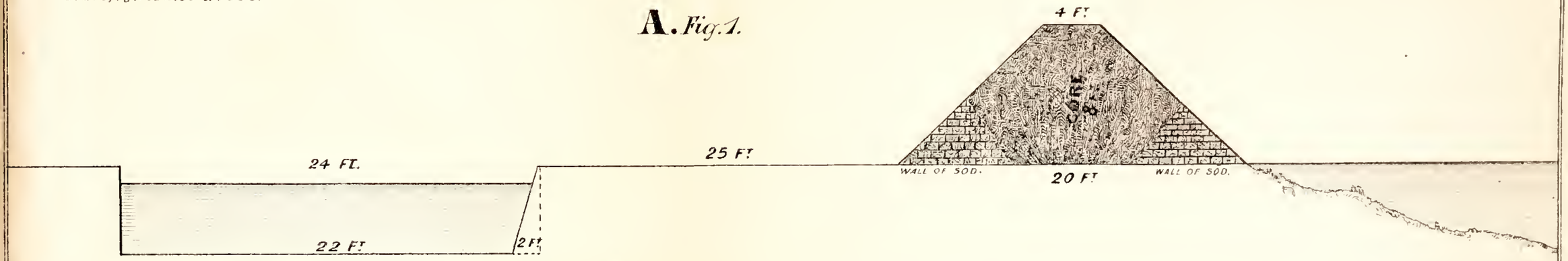
The above is respectfully submitted.

A. J. BIGELOW.

Sherman Island, August 5, 1871.

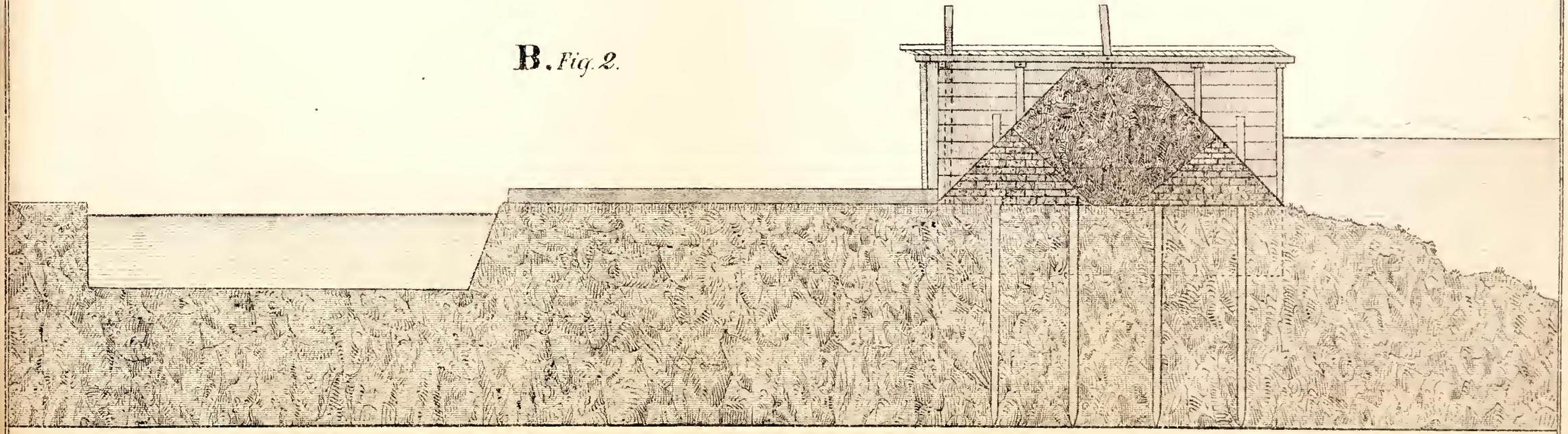
Scale, ⅛ Inch to a Foot.

A. *Fig. 1.*



CROSS SEC. DITCH, BENCH & LEVEE.

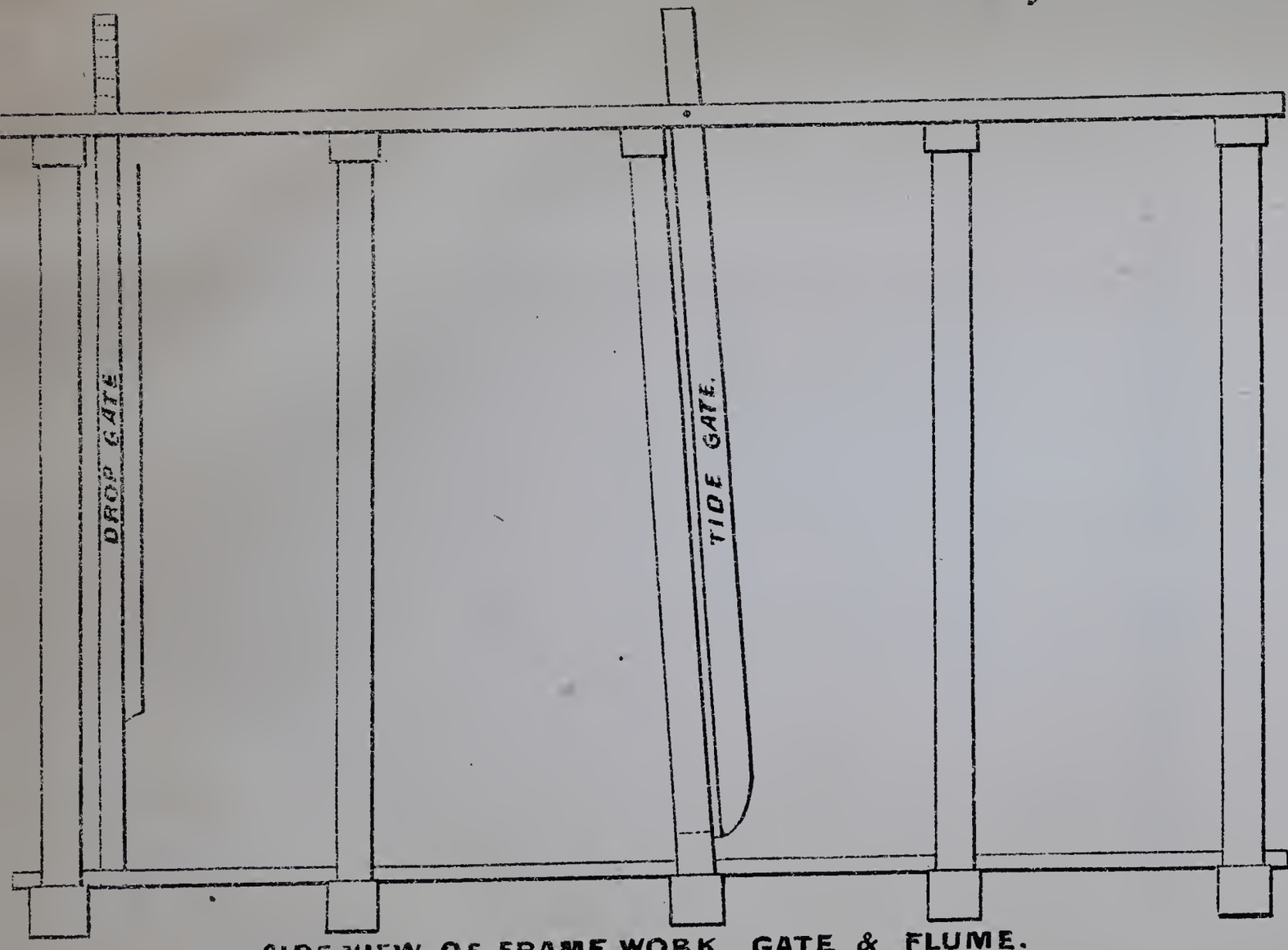
B. *Fig. 2.*



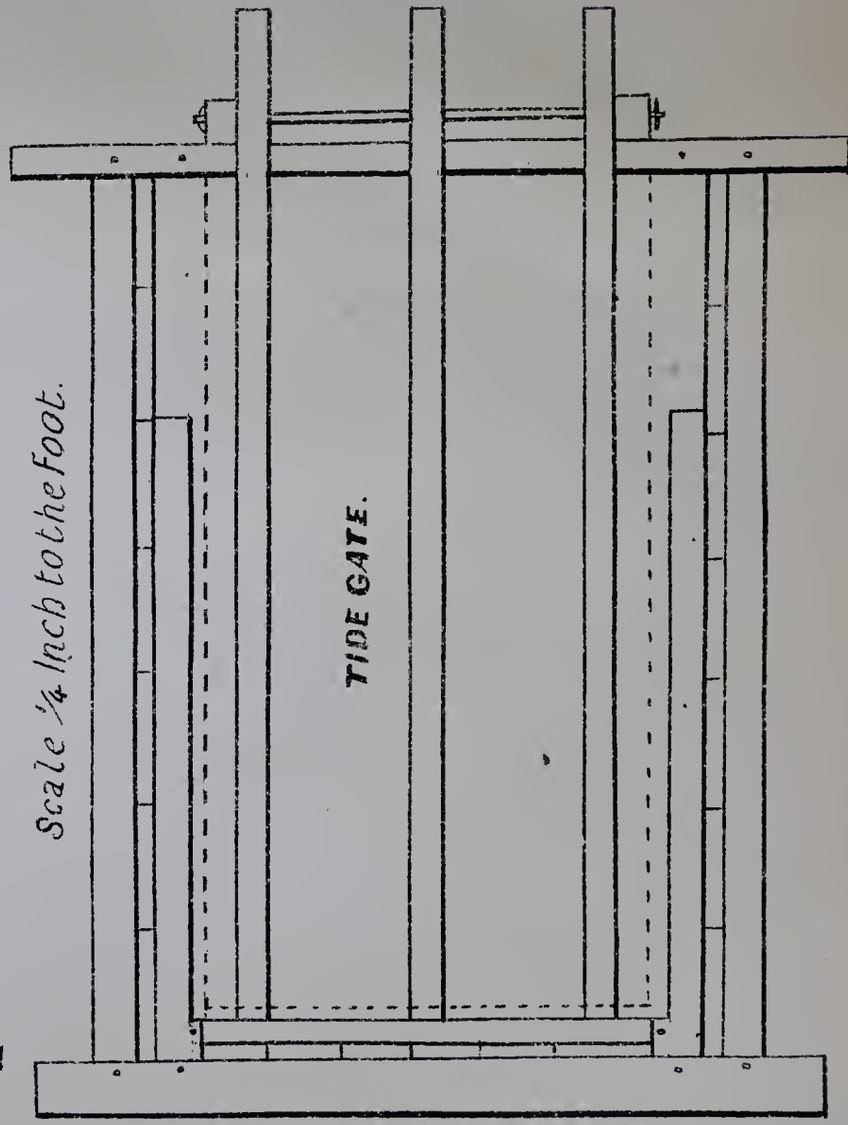
CROSS SEC. DITCH & BENCH *TWENTY FIVE FEET WIDE* & CROSS SEC. OF LEVEE, ALSO SIDE VIEW OF FLUME & GATE IN THE LEVEE.

LITH. HALLTON & REY. S.F.

B. *Fig. 1.*



SIDE VIEW OF FRAME WORK, GATE & FLUME.



VIEW OF GATE & SASH.

AN ESSAY

ON

THE CULTIVATION OF COTTON

IN CALIFORNIA.

BY SOLOMON W. JEWETT.

AN ESSAY

ON

THE CULTURE OF COTTON

IN

CALIFORNIA.

To the President and Board of Managers of the Eighth Industrial Exhibition of the Mechanics' Institute of the City of San Francisco:

GENTLEMEN—In presenting this Essay to your honorable body, allow me most respectfully to state, that in the outset of the Cotton enterprise, the writer of this article was the leading mind, but not the *working overseer*, or foreman, (so to speak); neither was he pecuniarily interested in the production or resources of the cotton field.

By dint of circumstances, however, "the wheel was put in motion" which resulted in an elaborate and successful experiment in some respects. The selection and preparing the ground, planting and selection of seed, its growth, harvesting, ginning the cotton, baling, vending, transporting, the manufacture of the cotton fibre into a good substantial cloth in a California Cotton manufactory, and after this, incidentally, several bales of this cloth material finding its way back to the ground and lodged on shelves of the store, erected under the supervision of your humble correspondent, which was stocked with goods to furnish the help on the cotton plantation, and the neighborhood in general.

Secondly, we will state that no money or means was withheld, but "every stone was turned" that was deemed to be useful and necessary in bringing forward a crop, and to stimulate others to go and do likewise; and lastly but least, we state that the ground purchased and pitched upon to try this grand experiment was of a rich alluvial composition, deep in fertilizing properties, deep deposits of the finest of the washings that form the hills and mountains in the distance.

Over four hundred and fifty acres were enclosed in this field by a good fence, and another tract was also purchased, numbering nineteen hundred and twenty acres, secured for future operations, in case the business was extended; all of this mentioned was termed "swamp lands."

Quite early in the month of February, A. D. 1864, operations commenced in earnest by fully employing over twenty active men. Some were directed to clear up the land, removing brushwood, weeds, bushes and small trees; all of

these, root and branch, were consumed by fire. The plough was soon put in motion, the best cast-steel plough, (No. 2, Boston manufacture,) overturning the soil deep and well, followed daily by workmen removing all roots and stumps which might obstruct the work.

Some were engaged in opening a large ditch or canal to draw the water from a river, which was tapped by a side cut two miles above. A portion of this canal and the larger ditches were hastily and cheaply opened by running an instrument of wood and plank, formed after the mold of the snow-plough used on railways and highways in New England. This machine did the rough work effectually by horse-power, saving the cost and labor of several hands with ditching shovels.

The cotton plant differs from most all other plants cultivated. It requires long seasons, free from frosts, that you may reap the full benefits and profits derived from it; and it is, as it were, a migratory plant. It can be grown in many climates under peculiar conditions; can be developed and acclimated by care of culture from one generation to another in the country where it is settled. A wise Providence has given us wool, a substitute for cotton, and that comes from migratory animals, and is found to flourish in different latitudes and under varied circumstances.

California gives the planter the longest possible period for the harvest, and consequently his policy should be to put in his crop as early as the frosts will guarantee, and press his crops to obtain early bolls, that the pickers may start their bags by the last of August. Here, in our experiment, although the work was hastened, the first seed was not planted until the first of May, and the continuation and close of the planting of the field of one hundred and thirty acres, by actual measurement, was not gone through with until the sixth of June.

The seed planted was fresh and fine; the best of each variety named herein all germinated and pushed forth into sunlight in five and six days, strong, and of a good, lively green hue, with scarcely a sickly plant to be seen. The seed was cast in vats of water, and allowed first to soak there two hours, then piled up in heaps to air and generate a moderate heat on the ground for two days. Occasionally it was stirred and over-turned, that heat should not increase to kill the germ; and before planting it was prepared by rolling all in good strong house ashes, mixed with a little slacked lime to prevent adhesion of the seed while sowing, and to repel such insects and earth depredations as might come in contact to injure the embryotic plant.

The seed was dropped from a bag swung around the shoulders of Asiatic laborers, who strung it along the trench prepared for it, on the middle of beds, quite plentifully, dropping as they stepped, the step gauging the work at intervals of from fifteen to twenty-four inches, at the rate of fifteen to twenty pounds to the acre; but of good seed a much less quantity would have answered. Unfortunately, the Mexican seed was planted first, and after, as fast as the ground was prepared, the Tennessee, and last of all the Sea Island. The Tennessee was planted after the twentieth of May, and the Sea Island in June. The Mexican beat the others in growth and beauty of stand, but the Tennessee was well in the boll by the time the Mexican was in the square. It has been proved that by acclimating, by a succession of years, it bolls earlier the second and third years than it does the first, and the crop is superior.

In all, about two thousand pounds of seed was planted on this field; and the Sea Island should have been planted in March, instead of June, to have proved a paying success, but the ground was not so easily prepared for the seed.

The whole field was inundated with water after the first ploughing, before the bolls were formed, and the last half of the land planted was also watered in the trenches formed in the centre of each bed before the seed was sown. The beds were made by turning from five to six furrows together, thus forming beds from three and a half to five feet in width each, according to the strength of the land; and, after planting, the plants were thinned down to one, at the second hoeing, at from sixteen to twenty-four inches in the row, averaging about twenty inches to the stand. The whole process of planting, hoeing, irrigating, picking and baling, was under careful supervision of parties interested; but Japanese and Chinamen were the living instruments to do the required work, which they successfully accomplished, faithful to a fault. We

should have mentioned that the seed was covered in the drills about three inches by horse-power, which dragged an instrument of cheap structure fashioned something like a shovel-plough, a board one foot wide with a notch of six inches in the centre, fastened with the notch downward; by dragging this along the deep drills, the seed was easily covered.

The crop needed but little attention after the plants were once thinned out in the stand, which was done at the first hoeing with the common light Yankee hoe; the second hoeing the mold was thrown from the plants, and thinned down to one in the stand; the third hoeing a heavier plough was used, turning the soil towards the plants, which require but little other culture.

Old cotton growers of Kansas and Texas pronounce the crop a success, from the fact of its beauty and strength, from the commencement. The whole field would have matured well and proved a paying business had the crop been planted in March and fore part of April, and in irrigating, "the precious art of not too much" was little understood in the production of this fibrous plant. In fact, after the first wetting, it should have received no irrigation at all, as the long top roots, penetrating down into the soil, were able to take care of the top by drawing for supplies from below.

During this process of growth we visited the coast to examine the cotton fields that were under culture in Los Angeles, and by that experiment were convinced that cotton would not prove a success on the borders of the sea. The cotton in the stand was not erect and flowing, but of inferior growth, which we attribute to the effect of the sea breezes which so often changes the atmosphere as it wafts over the country. Others that saw our cotton field compared it with the best field on the coast and came to the same conclusion.

The raising of cotton in the Southern States is well established on fixed laws that govern them; but to cultivate on the Pacific Slope by irrigating ditches proves to be quite another thing, and the *true process has to be learned*, and that perhaps too dearly for small capitalists. Our crop was thoroughly irrigated three times, which kept the plants in boll and bloom till December. Some parts of the field were flooded, other parts were watered by turning on the water in the centre of the beds near the plants; the latter process proved to be the better.

The ditches (of which there were several miles) were so nicely arranged that one man could irrigate about seven acres in a day. In the month of September the cotton was topped, by dexterously using a large knife; almost three acres were accomplished by each hand per day. This policy was recommended to check the growth of the plant and to hasten the maturing of the bolls. The cotton plants averaged in height from four and a half to seven and a half feet all over the field; some of the strongest covered the ground and cast a shadow nine feet in diameter, and more resembled trees than vegetable growth.

The soil and climate appeared every way favorable to the enterprise; but, for reasons already mentioned, the bolls were not fairly opened for picking till the tenth of October.

A cotton field of healthy growth, with the stand and lower branches in the boll, both ripe and green, the branches higher up in the square and the topmost in beautiful blossom, presents a scene as grand and sublime as the beholder could wish to see.

Only twenty-five cents the pound was offered for ginned cotton that fall, and only one purchaser in the market. The crop, precious in the older States, commanded at its highest figure one dollar and eighty-three cents per pound.

The cotton from this plantation was manufactured at Oakland, and the compensation was considered too small to encourage the further attempt; though, in the second year, the work being systematized, it would not cost more than half as much to plant and cultivate the plantation, to say nothing of other outside expenses of clearing, breaking up and preparing the ditches. The sea Island and Mexican varieties only turned off but a few bales; therefore the Tennessee seed was the only true and profitable variety to be put under culture in this locality.

Some of the best acres of Tennessee produced, under so unfavorable circumstances, about eight hundred pounds of seed cotton to the acre, which would

have been doubled if early planting and slight irrigation had been put in process and the cotton was of long and showy staple—so pronounced by all good judges. But the sample, which unfortunately we now hoped to have on hand and present for the inspection of this Board was taken from unmatured bolls, unopened, and gathered the last week in November. All of the suitable cotton was ginned, baled and sent to market.

The cotton was ginned by horse power, and one of the smallest-sized gins was used. The labor cost, per hand, from twenty-two to thirty dollars per month. At the commencement of the enterprise, the Superintendent was paid fifty dollars per month. He came from a cotton country, and was the pioneer that crossed the Rocky Mountains, and landed on the Pacific Coast the year previous to the first visit by General Fremont. He is now living on the same plantation.

Most respectfully yours.

SOLOMON W. JEWETT.

San Jose, July 25, 1871.

DESCRIPTION

AND

HISTORY OF GRASS CLOTH.

BY D. J. MACGOWAN, M. D.

DESCRIPTION

AND

HISTORY OF GRASS CLOTH.

Grass Cloth is manufactured from the fibres of a plant called by the Chinese *Ma;* it is a generic term, under which several varieties of that species are included. Among these, the *Tung-Ma, Pi-Ma, Shing-Ma Tien-Ma,* and others are used only as therapeutic agents. Cloth is manufactured from the *Chu-Ma Ta-Ma, King-Ma, Luh-Ma,* etc. There is also a species of Grass Cloth made from the *Koh.* All these have likewise a place in the pharmacopæia of China. In imitation of the native botanists, from whose works this account has been mainly derived, I shall principally limit my remarks to a description of the *Chu-Ma,* which belongs to the natural order of *Urticco.* It is a *Cannabis,* or hemp, but differing from the *Cannabis Sativa* sufficiently to warrant another designation. Perhaps, until it becomes better known, it may be called *Cannabis Sinuesis.*

It has an irregular cellular root of a yellowish-white color, which sends up annually ten, fifteen or more stems, to the height of from 7 to 10 feet. The stems are upright, slightly fluted, pilous and herbaceous; its leaves are on long petioles, alternate, ovate, roundish, serrate, simple. The upper surface pilous and dark-green, the lower of a silvery-gray. The flowers are described as minute, numerous, of a light green color, on a catskin-like receptacle or spike. It is found at the base of hills, and on dry soils, from Cochin-China to the Yellow river, and from Chusan to the farthest west that researches for the present can extend, and abounds chiefly in Kiang-su, Kiang-nau, Chih-kiang, Fuh-kiang, and the Canton provinces. Native writers do not include the latter province as its region. It is certainly remarkable that there is no notice of the *Ma* in the work referred to, (Fortune's *Wanderings in China,*) as it is cultivated extensively in many places visited by the author, and grows even on the walls of Ningpo.

The plant is mentioned in the Chinese classics, and was undoubtedly cultivated and employed by them a thousand years prior to our era. It is mentioned in the *Shu-king* as an article of tribute from the central part of China in the time of Yu, B. C. 2205; doubtless it came into use in more remote antiquity.

MEDICAL PROPERTIES.

The root is described by writers on Materia Medica as innoxious, sweet to the taste, of a cold nature and possessed of cathartic properties. The roots, seeds and leaves are all officinal. A long list of diseases are enumerated in which the plant is efficacious; but those throw no other light on its properties than to suggest it as comparatively inert. It is partly because of its not possessing the narcotic properties of the *Cannabis Sativa,* that a difference is pre-

sumed to exist between them. In this connection, I may remark that Grass Cloth is superior to linen for garments in hot climates: the latter being a rapid conductor of caloric, is often unsafe; the former is not so good a conductor, and is therefore more suitable. This may be owing to the fact that the latter is hot-pressed, by which it is rendered compact and smooth, whilst the process to which the other is subjected for the same purpose but partially affects it, or there are original differences in the fibres of European and Chinese linen.

PLANTING THE SEEDS.

This takes place in May. Great care is first taken in the selection of seeds and in the preparation of the soil. The seed should be gathered on the appearance of frost; those produced from a recent root are the best. After being dried they are stowed away in a basket or jar, mixed with sand or dry earth; others say, moist earth. The jar is then covered with straw to protect the seeds from the cold ; for, if exposed to its influence, they yield an imperfect plant.

Before planting them the seeds are tested by immersion in water; those which float are to be rejected, those which sink to be planted. A loose, dry soil is to be selected; if near a canal or rivulet, it is preferable. The ground is to be well ploughed and broken finely, manured and divided into beds about eight yards long and one wide; the beds are to be raked and afterwards made compact with a hoe. After this it is watered and left for a night; on the following day raking up and pressing down is repeated. The beds being smooth, two or three tablespoon-fulls are mixed with a bowl of earth and sown broadcast over half-a-dozen beds; when they are swept with a broom to cover the seeds. In some places the seeds are first made to sprout and then planted in drills, which are carefully filled up. Just before the blades appear, a framework is to be constructed over the beds, on which mats should be spread to protect them from the heat of June and July. The matting must be kept moist by day and removed at night, that the seeds may receive the dew.

The beds are to be constantly weeded. When the plant is about two inches high the frame work and matting may be removed. When three inches high, it should be transplanted, having been well watered the night before. The blades should be taken up separately with a portion of earth and planted in a field far removed from mulberry trees, about four inches apart. It may form a border to the circalia and vegetables, protecting them from the depredations of domestic animals, which all avoid the *Ma*. In dry weather the field is to be watered every three or four days, until the second decade, when it may be watered every tenth day.

In November and December manure it with horse or cow dung, earth straw or any rubbish, a foot or more thick, to protect it from cold. In March rake it away and expose the plant, watering it in dry weather and using rubbish of any kind for manure. A caution is given never to use swine dung, as it is saltish and hurtful to the *Ma*. In the third or fourth year—some say in the second—the plant may be cut and used.

PLANTING THE ROOTS.

The roots are to be cut in pieces of three or four fingers length, and are to be planted in May, half a yard apart, and watered every three or four days. On the appearance of the blades use the hoe and water them; they will be mature for cutting in the second year. In the course of ten years the roots become unfruitful; the shoots may be then cut off and enveloped in earth, and covered with matting, and transplanted in places 30 or 40 inches distant. The ground should be first well prepared with manure and freely manured afterwards—the manure being half water. Here, as before, the plants should be watered from time to time. In many cases fresh earth, pulverized bricks, ashes, etc., are used for manure. Some years the husbandman has his crop injured by worms; he needs therefore to seek for and destroy them as they appear, by picking them off.

CUTTING THE "MA."

It yields three crops every year. The first cutting takes place in June. Care is to be taken not to cut the young shoots. They are seven or eight feet high when the second cutting takes place; do not cut the original stem. During the latter part of September, or in October, the last cutting is performed, from which the finest cloth is made, the first being inferior, coarse and hard. After each cutting, the plant is to be covered with manure and watered, but not day by day unless it be cloudy. At Canton the plant is pulled up by the roots every year, from which it is evident that it differs widely from the *Ma* just described.

PEELING THE "MA."

On being cut, the leaves are carefully taken off with a bamboo knife by women and children, generally on the spot. It is then taken to the house and soaked in water for an hour, unless it is already wet by recent showers. In cold weather the water should be tepid. After this the plant is broken in the middle, by which the fibrous portion is loosened and raised from the stalk; into the interstice thus made the operator, generally a woman or child, thrusts the finger nails and separates the fibres from the centre to one extremity and then to the other. The stripping process is very easy.

It appears to be difficult to remove the fibres from the Canton *Ma*, as it is soaked in water more than 48 hours before peeling, which is done by men. They first cut off the roots, and then, separating the fibre from the stalk, strip it off by drawing it over a pin fixed in a plank. In either process half of the fibre is taken off at one stroke. The next process is scraping the hemp, to facilitate which the fibre is first soaked in water. The knife is about two inches long; its back is inserted in a handle twice the length. This rude implement is held in the left hand; its edge, which is dull, is raised a line above the index finger. Strips of hemp are then drawn over the blade from within outwards, and, being pressed upon by the thumb, the pilous portion of one surface and the mucilaginous part of the other are thus taken off. The hemp then rolls up like boiled sinew. After being wiped dry it is exposed to the sun for a day and then assorted, the whitest being selected for fine cloth.

BLEACHING AND DIVIDING.

A partial bleaching is effected on the fibres before they undergo further division, sometimes by boiling and at other times by pounding on a plank with a mallet. These operations are in some places repeated. After being dried in the sun an important operation then proceeds by women and children, to whom is entrusted the tedious process of splitting the fibres, which they do with their finger nails. Expert hands are able to carry this division very far. When this process has been preceded by hatcheling the threads are finer and softer. The threads are formed into balls and subjected to frequent soakings and washings. The ashes of the mulberry leaf are recommended to be put in the water with the hemp (some use lime) for a whole night. Others simply expose it to dew and sun. In rainy and cloudy weather it should be exposed to a current of air in the house; moisture darkens it. The threads are now ready for splicing—the work of women and children, the labor of the agriculturist being concluded—when the threads are rolled into balls after being sized or stiffened with congee. Before the thread is ready for the weaver the balls are steamed over boiling water in a closed oven. They are then spread out to dry.

Dr. Macgowan adds some notices of the other kind of plants called *Ma* by the Chinese. The *King-Ma* is about three feet high; its fibres are separated by water rotting; coarse cloth and sandals are made of them. The stalks are

dipped in sulphur to make matches. The *Chu-Ma* is found wild, and its fibre is used to make twine. The *Ta-Ma*, or *Hau-Ma* is used in making cloth and cordage; its fibre is used as a support to candle wicks. The *Luh-Ma* furnishes hemp for coarse rice bags. The *Tung-Ma* or *Pi-Ma* are used for pigments, one serving for cakes, the other for paper. The *Chi-Ma* (*Sesamum indicum*) was brought from India B. C. 156; it is cultivated for its oil. The *Koh dolichos bulbosus* is a creeper, having an immense purple root, white inside, and furnishing a flower like arrow-root. It grows twenty or more feet high; the leaves are trilobate, light green beneath. The fibre is loosened by boiling, then taken off by the nail, washed in running water and beaten with mallets. It has been used to make cloth for many ages; the cloth is yellow and fine as grass-cloth. The best brought to Ningpo is called *Hai-nau Koh*. It is also manufactured in Kwei-chau to a great extent.

AN ESSAY

ON

PEARLS AND PEARL-MAKING

IN CHINA.

BY D. J. MACGOWAN, M.D.

Goethe, whose claims to distinction in the scientific world have been imperfectly appreciated, owing to his greater poetic renown, (himself a discoverer,) attributes discoveries to the age rather than to individuals, thereby detracting more credit from the cultivators of science than many will be willing to concede; for besides simultaneity of inventions and discoveries, there are not a few of widely different dates which have been identical and independent. The method of producing pearls artificially, as well as the art of manufacturing spurious ones, affords instances among many that might be adduced from the annals of science and art in illustration of this fact. A history embracing rediscoveries, and simultaneous ones including inventions pertaining to the same catagory, would present a curious and instructive chapter in the records of the human race, while it would show that the domain of knowledge has oftener than is generally supposed been explored in the same direction, and with like success, by different persons (both contemporaneous and otherwise) who are equally entitled to the credit of originality.

VALUE OF THE GEM IN ANCIENT DAYS.

Priority in the mere discovery of pearls is an honor which none will contend for, as it required neither genius nor sagacity. Mankind could not have indulged long in molluscous food without meeting with these animal gems. In the *Shu-King*, one of the most ancient books of China, it is stated that pearls were sent to Court as tribute from an adjacent State, now forming the N. E. portion of the province of Kiang-su. The earliest of dictionaries, (compiled eleven centuries before our era, by Duke Chau, the inventor of the compass,) enumerates pearls as one of the precious productions of Shensi. They have been obtained in most abundance from the river Hwai, in Nyan-hwui; but this much-admired ornament has been found in all parts of Eastern Asia, from

the Himalayas to the Pacific, and from Manchuria to the Straits, being in requisition for the decoration of shoes, girdles, ear-rings, necklaces, and head-dresses and for the embellishment of popular divinities. There may now be seen at the Buddhist island of Poo-too, the seat of the Goddess of Mercy, and the place whence she ascended to the skies, an image of this deity about five inches high, of pure gold, except the trunk, which is formed of a large lustrous pearl, the whole being a gift from the Emperor Kang-hi. The frequent mention of pearls in Chinese history shows the value set upon them by the Imperial Court, and by all who were ambitious of adorning their persons. The introduction of some of these references in this place will not be inappropriate.

A pearl-dealer in Shan-shing, (an ancient city between Kang-chow and Ningpo,) was commissioned by the Empress (202 B. C.,) to procure a pearl three inches in circumference, which he succeeded in obtaining, and for which he was pald 500 pieces of silver, ($1,500); whereupon an envious princess secretly managed, by offering a larger reward, to procure one from the same person an inch larger.

The reigning Emperor, a century before our era, sent a messenger to the sea to purchase "Moon Pearls," the largest of which was two inches in circumference. At a later period one was brought to Court as large as a plum; these were doubtless imported from India. It is stated that about this period there were some pearls in possession of the Emperor so lustrous as to be visible at a third of a mile distant, and one—a perfect Koh-i-noor—the size of a man's fist, was so brilliant as to be visible in the dark at the distance of three miles. It was found in Yang-chow, in the province of Kiang-su.

Allusion is made to the destruction by fire of a Jewish temple, about 140 years before our era, in which pearls were so profusely employed in making screens or curtains, that for ages afterwards these gems might be found in the ruins—an interesting archæological fact.

Pearls of various sizes were frequently brought to Court from Amoy, whither they came from Ceylon. One of these, sent as a tribute, possessed such extraordinary splendor as to illuminate a room, but its brilliancy totally disappeared at the close of three years after its reception—a curious and well-attested instance of intermolecular change.

Analagous instances of pearls undergoing decomposition might be adduced, particularly in cases where light has been excluded and they have been exposed to moisture. It is probably in consequence of their perishable nature that none of these Oriental gems have been discovered by Layard or Botta, in disinterring the palaces of Assyria.

Mingti, a monarch of the early part of the tenth century, celebrated for his extravagance, had such a profusion of pearls ornamenting his canopy, the trappings of his horses and chariot, and decorating his person, and the persons of his nobles, that the road was often strewn with the gems which the gorgeous *cortege* dropped in its train.

A singular anecdote is recorded of an Embassy bringing tribute from Chulien, (the name, probably, of a Malayan State,) in the reign of Ting-tsung, A. D. 1023. The Embassy petitioned for permission to practice a custom of their country, in their expected audience with the Emperor, called "Scattering in the Palace." It was conceded. One of their number approached the side of the Imperial hall, where he knelt, and, holding up a golden charger in the form of a lotus which contained a large number of assorted pearls, he scattered the contents on the floor in front of the Emperor, according to the most respectful custom of his native land. The attendants swept up above ten *liang* (nearly a pound) of pearls, which the Emperor divided amongst his officers. A somewhat similar display of oriental magnificence was exhibited in the preceding reign, by an embassy from the state whose King was called Shih-lo-Chay-in-to-lo, and whose Ambassador was Pah-to-li. The tribute-bearer brought a letter written with gold, a cap and a garment composed of strings of pearls, and also 105 *liang* of pearls of various sizes.

Manchuria seems to have contributed to supply the Court of Peking with these coveted ornaments, ere its hardy adventurers subjugated to their sway the black-haired race. We find, when they had fought their way from vassalage to independence and were dictating terms of peace to the Chinese gov-

ernment, that one of the conditions was the interchange of the most valuable productions of each country. They proposed that the Chinese should make them presents annually of 10,000 taels of gold, 100,000 of silver, 10,000 pieces of silk and 100,000 pieces of cotton; cloth the Manchus presenting in turn 1,000 sable skins, 1,000 pounds of ginseng, and ten "Oriental pearls." They either reckoned their prowess rather high, or greatly overrated the relative value of the courtly presents.

THEORIES REGARDING PEARLS.

The facility with which the dual theory may be applied to phenomena of nature, enables Chinese philosophers to explain very satisfactorily to themselves whatever comes under their observation. Pearls are summarily disposed of as the female portion of the male principle, or more briefly as the female principle of mussels. They are regarded as a charm against fire, and are supposed to abound when good Emperors reign. Buddhist authors say that they come from the brain of the fabled dragon, and give various Indian legends respecting moní (money?) pearls, the light of which was so strong that rice could be cooked by them. The Tanists, who like our mediæval alchymists long sought to discover a method of transmuting metals, and who also were in eager quest of the elixir of immortality, tried many experiments with pearls, which frequently formed an ingredient in the formula for conferring perpetual youth. The following is from a standard authority: "Take a pearl which has been worn on the body for a long time, of an inch or more long, steep in wort, and it will dissolve like quicksilver; or use floating (pumice?) stone and honey-comb and mix with the gall of a serpent, and the pearl may be drawn out to the length of three or four feet. Make it into pills, and swallow them; thenceforth food will be unnecessary." Immortality will have been obtained. It is not long since that pearls ceased to be used in the West as a medicine, and, as might be expected, they still hold an important place in the materia medica of China.

Amidst many puerile and superstitious notions regarding the nature of pearls, we meet with a shrewd old writer who had at least an idea of their true character, for he states that they are the result of diseased action in the shell—anticipating the discovery of a Danish naturalist, as the latter anticipated the re-discovery of Sir Everard Home of their being the "abortive eggs of oysters enveloped in their own nacre." This, however, accounts only for those found within the mantle; those which are attached to, or in contact with the shell, are occasioned by the intrusion of foreign bodies, and resemble exostosis in animals of a higher degree of organization. There are several places in the Yellow river which have furnished pearls of a reddish hue; white lustrous ones are found in clear running water, while those of a dark color are met with in still, turbid water.

In Japan there are said to be splendid green specimens of the gem; the inlaid nacre work of that country certainly far excels that of any other land. A Chinese author says that the art of inlaying mother-of-pearl was introduced from that country.

The practice of burying pearls with the dead must have been, if it is not at present, very common, as Chinese ingenuity has been exercised in devising methods for restoring the lustre of those found in tombs. The following directions are from a Handbook of Arts, for removing the discoloration occasioned by gaseous emanations of decomposing bodies: "Take the watery extract of *yih-ming* grass and some roasted wheat, put them with the stained pearls into a silken bag and work them in the hands until the white color is restored." Several works quoted in the Encyclopædia (Keh-Chi-King-Yuen,) from which most of the foregoing information has been drawn, contain notices respecting pearl fisheries in the south of the Canton province, in the department of Lien-chau, near the city of Hoh-pu, on an adjacent island. The principal fishery is in an unfathomable lake, supposed to have a subterranean connection with the sea, being apparently the crater of an extinct volcano

THE PEARL FISHERIES OF CHINA.

The fishing season commences in April, when the diver and others engaged in the business first conciliate the gods by presenting the five sacrificial animals —horses, kine, sheep, swine and fowls – paper images of some of these being economically substituted as equally acceptable in the religious ceremony. In default of this sacrifice the winds and waves were thought likely to be unpropitious or monster fish which throng the waters would be encountered. The natives of that part of the coast are represented as rude barbarians and are all but amphibious, being expert divers from childhood. Provided with a knife to separate the shells which adhere to rocks, and with a basket for storing his spoils, the hunter of the deep is let down from a vessel by a rope fastened to his waist, and by which he is drawn up at a given signal.

There was considerable difference in the quantity obtained from year to year; and then again, during some seasons, sharks were so numerous as to cause great loss of life amongst the divers. The sea was often reddened with their blood, and their companions on drawing up the rope would find attached to it only a portion of a body. At length the business became so perilous from this cause that diving was relinquished for dredging; first a simple rake being employed, and subsequently a scoop, trailed along between two boats, by which shells were gathered in great numbers. Indeed, it is likely that the method was so effective as to exhaust the supply, since there does not appear to have been any pearl fisheries on that coast after the arrival of Europeans in China.

Dredging was resorted to at the beginning of the sixteenth century. At one period the fishery was of such importance that a Pearl Inspector was appointed by the Viceroy of Canton, to receive a share for the government or to levy a tax on this business. That officer, however, found it no easy matter to prevent fraud. Despite his vigilance and that of his subordinates, the divers would when below cut open the shells, extract the pearls and conceal them in their mouths. One writer speaks of having been in the Collector's office when several panniers of shells were brought in. These were attached to a kind of tree resembling a branch of the willow, which grew amongst the stone, having, as it were, shells for the fruit. Frequently the pearls from the Canton fisheries were of the size of peas, some were as big as a "bolus," but generally, however, they were like a grain of millet. The "pearl womb," as the mantles or flesh of the oyster *(Meleagrina Margaritifera)* is called, are strung together and dried, and, when cooked with cassia buds, are eaten with rice. Numerous minute pearls are often found in their substance during mastication. There is no evidence of the existence at any period of any other pearl fisheries in China to be met with in native works. Polo mentions that in the province of Kan-du, by which is probably meant a portion of Yunan, there was a lake which abounded in pearls, and to such an extent, that their gathering was forbidden to all save the monarch, lest they should become so common as to be valueless. As the great traveler was frequently led into error by his Mongolian informants, and sometimes he himself exaggerated, this is doubtless an instance of one or the other of these cases. It should be added, however, that Père Martini enumerates pearls among the productions of that part of the Empire.

IMITATIONS.

Arabian ingenuity was perhaps the first to be exercised in forming spurious pearls; but there is much uncertainty respecting the mode, and some doubts as to the fact itself. Allusion is made in the beginning of the seventh century to a Chinese artist, who, by a peculiar composition, made pearls of the same color and brightness as the genuine gem. The method was not divulged, probably the art was lost, for those who now practice it state that it became known about the middle of the sixteenth century, and is substantially the same as that invented by Jacquin, a French artist, in the reign of Henry IV—that is, about a hundred years later than the Chinaman.

The scales of a fresh-water fish, the *Cyprinus gibleo*, are stirred in water and macerated for twelve hours when the nacre-like substance which gives lustre

and beauty to their upper surface, separates and falls to the bottom of the vessel, forming what the French call "*Essence d'Orient*," or "Essence of Pearl," but much superior to that article, because perfectly pure. The French method it is said, consists in reducing the scales to powder, by which means the "essence" is composed of a mixture of the enamel and the gelatinous substances in covers, and hence its liability to putrify. Reaumur long endeavored to discover means for preserving it from decomposition. It is now, however, preserved in ammonia. How much superior and yet how simple is the Chinese plan? Perhaps the enamel or nacreous covering of the scales of the fish generally is capable of being employed more largely in the arts; it appears to be *sui generis*, and seems hitherto to have escaped the scrutiny of organic chemistry.

To prepare the nacreous paste for use, an adhesive property is imparted to it by the addition of a little fish glue and an infusion of lichen. When employed it is put in a small cup which is placed in tepid water. Beads made of the vitreous substance employed in making artificial jade are dipped into the paste, which gives them a splendid pearly covering. Strings of such beads can be had so cheaply, that the poorest children can procure them. When exposed to friction or moisture, the gummeous matter easily rubs off, which prevents the general use of these elegant ornaments—a difficulty which Beckman, in his "History of Inventions," informs us was overcome in France at the suggestion of a lady, who proposed to the artist the introduction of the preparation into hollow beads, thus bringing the invention to perfection.

HOW GENUINE PEARLS ARE MADE.

If the Chinese failed to perfect the art of making factitious pearls, they have admirably succeeded in effecting the growth of the genuine testaceous gem. Imperfect and contradictory accounts of the mode of producing pearls in mussels having at different times appeared, and as the only place of culture is within a few days' journey from Ningpo, Mr. Consul Hague and myself despatched an intelligent native to make enquiries on the spot concerning the art, and to procure specimens in different stages of growth. The following result of these investigations made on two successive journeys, may be relied on as authentic:

The practice of the art is confined to two conterminous villages near the district of Teh-tsing, in the northern part of Chih-kiang, in a silk-producing region. In the month of May or June large quantities of the mussels, (*mytilus cygnus*) are brought in baskets from the Tahu, a lake in Kiang-su, about thirty miles distant, the largest among the full grown being specially selected. As their health suffers on the journey, they are allowed a few days' respite in bamboo cages in the water before tortured for the sake of human vanity, when they are taken out to receive the matrices. These are various in form and material, the most common being pellets made of mud taken from the bottom of water courses, dried, powdered with the juice of camphor-tree seeds, and formed into pills which when dry are fit for introduction into the unfortunate subject. Moulds which best exhibit the nacreous deposit are brought from Canton, and appear to be made from the shell of the pearl oyster; the irregular fragments thus procured are triturated with sand in an iron mortar, until they become smooth and globular. Another class of moulds consists of small images, generally of Buddha in the usual sitting posture, or sometimes of fish; they are made of lead, cast very thin by pouring on a board having the impression. Pearls having these forms have excited much surprise, since they first attracted the attention of foreigners a few years back.

The introduction of the pearl nuclei is an operation of considerable delicacy. The shell is gently opened with a spatula of mother-of-pearl, and the free portion of mollusc carefully separated from one surface of the shell with an iron probe; the foreign bodies are then successively introduced at the point of bifurcated bamboo sticks, and placed in two parallel rows upon the mantled or fleshy surface of the animal; a sufficient number having been placed on one side, the operation is repeated on the other. Stimulated by the irritating bodies, the suffering animal spasmodically presses against both sides of its testaceous skeleton, keeping the matrices in place. This being done, the mussels are de-

posited one by one in canals or streams, or pools connected therewith, five or six inches apart, at depths of from two to five feet, in lots of from five thousand to fifty thousand.

If taken up a few days after the introduction of the mould these will be found attached to the shell by a membraneous section, which at a later period appears as if impregnated with calcareous matter; and finally, layers of nacre are deposited around each nucleus, the process being analogous to the formation of calculary concretions in animals of a higher development. A ridge of nacre generally extends from one pearly tumor to another, connecting them all together.

About six times in the course of the season several tubs of night soil are thrown into the reservoir for the nourishment of the animals. Great care is taken to prevent goat manure falling in, as it is highly detrimental to the mussels. preventing the secretion of good nacre, or killing them, as the quantity may be great or small.

In November the shells are carefully collected by the hand, the muscular portion removed and the pearls detached by a sharp knife. If the basis of the pearl be of nacre it is not removed, but the earthen and metallic matrices are cut away, melted yellow resin poured into the cavity and the orifice artfully covered by a piece of mother-of-pearl. In this state these more than semi-orbicular pearly pellicles have much of the lustre and beauty of the solid gem, and are furnished at a rate so cheap as to be procurable by all who care to possess them. They are generally purchased by jewellers and others, who set them in tiaras, circlets and various ornaments of female attire. Those formed on the image of Buddha are finished in the same manner, and are used as ornaments and amulets on the caps of young children. A few shells are retained with their adhering pearls, for sale to the curious and superstitious, specimens of which have by this time found their way into the principal public and private cabinets of Europe and America. They are generally about seven inches long and five broad, containing a double or triple row of pearls or images, as many as twenty-five of the former and sixteen of the latter to each valve! That the animals should survive the introduction of so many irritating bodies, and in such a brief period secrete a covering of nacre over them all, is certainly a striking physiological fact. Some naturalists, indeed, have expressed strong doubts as to its possibility, supposing the pearls were made to adhere to the shell by some composition; but the examination of living specimens in different stages of growth, having both valves studded with pearls, has fully demonstrated its truth. A tinge of yellow is found over the whole inner surface of some shells, showing that the more recent secretion of nacre by the suffering animals was unnatural. The flesh of all, however, is eaten.

NATIVE INDUSTRY.

Above five thousand families are represented as being engaged in this singular branch of industry in the villages of Chung-kwan and Sian-Chang-Ngan; they, however, mainly derive their support from cultivating the mulberry and in rearing silk-worms and other agricultural occupations. Those who are not expert in the management of the shells lose 10 or 15 per cent. by deaths; others, none in a whole season. The invention is attributed by the villagers to a native of the place, an ancestor of many of them, named Yu-Shun-Yang, to whom a temple has been erected in which divine honors are paid to his image. He lived about the close of the fourteenth century.

The topography of Chih-kiang mentions a pearl sent to Court in A. D. 490, which resembled Buddha, being three inches in size. The resemblance was probably fanciful, being but an irregular form of pearl produced in the usual manner. Those now made are but half an inch long, and, while in the shell, have a bluish tint, which disappears with its removal from the matrix.

In the manufacture of factitious pearls, we find the Chinese anticipated the French, affording an instance of independent invention, and, in effecting the growth of true pearls, they anticipated the discovery of Linnæus, which must be taken as another instance of the same character. It has been suggested that the great Swedish naturalist had heard of the Chinese method, or, at

least, he was indebted to them for the *idée mère;* but there is no ground for believing that philosopher capable of such an artifice as this supposes. It will be remembered the Government of his country liberally rewarded him for the discovery, and that the rank of nobility so honorably conferred upon him appears to have been prompted by the same circumstance. Coincidences of this kind have been too numerous to authorize any doubts, particularly where they asperse the reputation of the high priests of science.

EXPERIMENTS AND SUGGESTIONS.

In an elaborate and interesting tract on "Pearls and Pearl Fisheries," in *Chambers' Miscellany*, allusion is made to a statement respecting a method of producing pearls in China, which must be taken as apocryphal. Mother-of-pearl beads are said to be strung on a thread and thrown into the live animal, so that in the course of a year sporical pearl-beads are found, resembling the real pearl. Specimens are also referred to in the cabinet of the British Museum from which the pearls had been cut away, exhibiting a concave depression; and hence it was inferred that the nuclei had been introduced when the animals' shells were younger and thinner. The internal shell is never scraped off, and, as is represented, for the insertion of a nucleus, the depressions referred to are occasioned by the process of absorption which takes place under the foreign body while secretion is operating above. It has also been stated that specimens have been met with, in which pieces of wire had been thrust through a perforation made in the shells, as the foundation of pearls. None of this description are known to pearl dealers in this part of China. When pearl mussels are suffered to remain several years (which is rarely done) with these foreign bodies in contact with their shells, the morbid product is formed of so many layers of nacre as to afford pearls of most beautiful character. All experiments of this description appear to have been tried in the fresh-water mollusca. Were the attempt made with oysters, particularly with the pearl porcina species, it would doubtless prove yet more successful. Perhaps, now that Californian fisheries are within the sphere of their observation some of my ingenious countrymen may be found willing to undertake the enterprise. It is very possible the art is susceptible of improvement, and could it be carried so far as to render the health-destroying and perilous pursuit of diving unnecessary, the profit which might thereby accrue to trade or art would be of small consequence compared with the boon it would confer on humanity.

THE TALLOW TREE,

AND

ITS USES.

BY D. J. MACGOWAN, M.D.

THE botanical characters of this member of the *Euphorbiaceæ* are too well known to require description; but hitherto no accurate account has been published of its varied uses. Although it has become a common tree in some parts of India and America, its value is appreciated only in China, where alone its products are properly elaborated. In the *Encyclopœdia Americana* it is stated that this tree is almost naturalized in the maritime parts of South Carolina, and that its capsules and seeds are crushed together and boiled, the fatty matter being skimmed as it rises, hardening when cool.

Dr. Roxburgh, in his excellent *Flora Indica*, says: "It is now very common about Calcutta, where in the course of a few years it has become one of the most common trees. It is in flower and fruit most part of the year. In Bengal it is only considered an ornamental tree; the sebaceous of its seeds is worthy of cultivation. It is only in very cold weather that this substance becomes firm; at all other times it is in a thick, brownish fluid state and soon becomes rancid. Such is my opinion of the famous vegetable tallow of China."

Dr. Roxburgh was evidently misled in his experiments by pursuing a course similar to that which is described in the *Encyclopedia Americana* (and in many other works) or he would have formed a very different opinion of this curious material. Analytical chemistry shows animal tallow to consist of two proximate principles—stearine and elaine. Now, what renders the fruit of this tree peculiarly interesting is the fact that both these principles exist in it separately, in nearly a pure state. By the above-named process stearine and elaine are obtained in a mixed state, and consequently present the appearance described by Roxburgh. Nor is the tree prized merely for the stearine and elaine it yields, though these products constitute its chief value: its leaves are employed as a black dye; its wood is hard and durable, and may be easily used for the blocks in printing Chinese books and various other articles; and, finally, the refuse of the nut serves for fuel and manure.

CULTIVATION OF THE TREE.

The *Stillingia Sabifera* is chiefly cultivated in the provinces of Kiang-se, Kiang-nau and Chih-kiang. In some districts near Hang-chau the inhabitants

defray all their taxes with its produce. It grows alike on low alluvial plains and on granite hills, on rich moulds on the margin of canals and on the sandy sea-beach. The sandy estuary of Hang-chau yields little else. Some of the trees at this place are known to be several hundred years old, and, though prostrated, still send forth branches and bear fruit. Some are made to fall over rivulets, forming serviceable bridges. They are seldom planted where anything else can be conveniently cultivated, as detached places, corners about houses, roads, canals and fields, etc.

Grafting is performed at the close of March or in April, when the trees are about three inches in diameter, and also when they attain their growth.

The Chinese *Fragrant Herbal* says that it is the practice of some gardeners, instead of grafting, to break the small branches and twigs, taking care not to tear or wound the bark. In winter, when the nuts are ripe, they are cut off with the twigs by a sharp bill-hook attached to the extremity of a long pole, which is held in the hand and pushed upwards against the twigs, removing at the same time such as are fruitless.

EXTRACTING THE TALLOW.

The harvesting accomplished, the capsules are taken and gently pounded in mortar to loosen the seeds from their shells, from which they are separated by sifting. To facilitate the separation of the white sebaceous matter enveloping the seeds, they are steamed in tubs having convex, open wicker bottoms, and placed over cauldrons of boiling water. When thoroughly heated they are mashed in the mortar and then transferred to bamboo seives, kept at a uniform temperature over hot ashes.

As a single operation does not suffice to deprive them of all their tallow, the steaming and sifting is therefore repeated. The article thus procured becomes a solid mass on falling through the seive, and, to purify it, is melted and then formed into cakes for the press. These receive their form from bamboo hoops, a foot in diameter and three inches deep, which are laid on the ground over a little straw. On being filled with the hot liquid the ends of the straw underneath are drawn up and spread over the top, and, when of sufficient consistence, are placed with their rings in the press. This apparatus, which is of the rudest description, is constructed of two large beams placed horizontally so as to form a trough capable of containing about fifty of the rings, with their sebaceous cakes. At one end it is closed, and at the other adapted for receiving wedges, which are successively driven into it by ponderous sledge-hammers wielded by athletic men.

The tallow oozes in a melted state into a receptacle where it cools. It is again melted and poured into tubs smeared with mud to prevent adhering. It is now marketable in masses of about eighty pounds each, hard, brittle, white and opaque, tasteless and without the odor of animal tallow. Under high pressure it scarcely stains bibulous paper; it melts at 104° Fahr. It may be regarded as nearly pure stearine; the slight difference is doubtless owing to the admixture of oil expressed from the seed in the process just described. The seeds yield about 8 per cent. of tallow, which sells for about five cents per pound.

PRESSING OUT THE OIL.

The process for pressing the oil, which is carried on at the same time, remains to be noticed. It is contained in the *kernel* of the nut; the sebaceous matter which lies *between* the *shell* and the *husk* having been removed in the manner described, the kernel and the husk covering it are ground between two stones, which are heated to prevent clogging from the sebaceous matter still adhering. The mass is then placed in a winnowing machine, precisely like those in use in Western countries. The chaff being separated, the white oleaginous kernels are exposed, which, after being steamed, are placed in a mill to be mashed.

This machine is formed of a circular stone groove twelve feet in diameter, tapering at the edge, and is made to revolve perpendicularly by an ox harnessed to the outer end of its axle, the receiver turning in a pivot in the centre of the

machine. Under this ponderous weight the seeds are reduced to a mealy state, steamed in tubs, formed into cakes and pressed by wedges in the manner before described, the process of mashing, steaming and pressing being likewise repeated with the kernels.

WHAT THE OIL IS USED FOR.

The kernels yield about 30 per cent. of oil. It is called *Tsing-yu*, and sells for about three cents per pound. It answers well for lamps, though inferior for this purpose to some other vegetable oils in use. It is also employed for various purposes in the arts, and has a place in the Chinese Pharmacopæia because of its quality of changing gray hair to black, and other imaginary virtues. The husk which envelopes the kernel and the shell which encloses them, and their sebaceous covering, are used to feed the furnaces; scarcely any other fuel is necessary for this purpose. The residuary tallow-cakes are also employed for fuel, a small quantity of it remains ignited a whole day. It is in great demand for chafing dishes during the cold season.

Finally, the cakes which remain after the oil has been pressed out are much valued as a manure, particularly for tobacco fields, the soil of which is rapidly impoverished by that plant.

ILLUMINATING PROPERTIES OF THE OIL.

Artificial illumination is generally procured by vegetable oils, but candles are also employed by those who can afford them, and for lanterns. In religious ceremonies no other material is used. Lanterns are much used, and as the gods cannot be acceptably worshipped without candles, the quantity consumed is very great. With an unimportant exception, Chinese candles are made of what I beg to designate as vegetable stearine. When the candles, which are made by dipping, are of the required diameter, they receive a final dip into a mixture of the same material and insect wax, by which their consistency is preserved in the hottest weather. They are generally colored red, which is done by throwing a minute quantity of Alkanet-root (*Anchusa Tinctoria*, brought from Shantung) into the mixture. Verdigris is sometimes employed to dye them green. The wicks are made of rush coiled round a stem of coarse grass, the lower part of which is slit to receive the *pin* of the candlestick, which is more economical than if put into a socket.

Tested in the mode recommended by Count Rumford, these candles compare favorably with those made from spermaceti, but not when the clumsy wick of the Chinese is employed. Stearine candles cost about eight cents per pound.

INSECT WAX OF CHINA.

BY D. J. MACGOWAN, M.D.

Prior to the thirteenth century beeswax was employed as a coating for candles; but about that period the white wax insect was discovered, since which time that article has been wholly superseded by the more costly but incomparably superior product of this insect. It has been described by the Abbé Grosier, Sir George Staunton and others; but those accounts differ so widely amongst themselves, as well as from that given by native authors, as to render further inquiry desirable. From the description given by Grosier, entomologists have supposed the insect which yields the *Peh-lah* or white wax to be a species of *Coccus*. Staunton, on the contrary, describes it as a species of Cicada (*Flata Limbata.*) As described by Chinese writers, however, it is evidently an *apterous* insect; hence the inference is, either that there are two distinct species which produce white wax, or the insect Staunton described was falsely represented as the elaborator of the beautiful material.

This, like many other interesting problems in the Natural History of this portion of the globe, must remain unsolved until restrictions on foreign intercourse are removed. In the meantime, writers may be consulted with advantage. It is from two herbals of high authority (the *Pun-Tsan* and the *Hiang-fung-Pei*) that the subjoined account has been principally derived:

The animal feeds on an evergreen shrub or tree (*Ligustrum Unidum*) which is found throughout Central China, from the Pacific to Thibet; but the insect chiefly abounds in Szi-chuan. It is met with also in Hon-an and Hupch. A small quantity is produced in the district of King-wha, Chih-kiang province, of a superior description. Much attention is paid to the cultivation of this tree; extensive tracts of country are covered with it, and it forms an important branch of agricultural industry. In planting, they are arranged like the mulberry, in rows about two feet apart; both seeds and cuttings are employed. If the former, they are soaked in water in which unhusked rice has been washed and their shells pounded off. When propagated, branches an inch in diameter are recommended as the most suitable size. The ground is ploughed semi-annually and kept perfectly free from weeds. In the third or fourth year they are stocked with the insect. After the wax or insect has been gathered from the young trees they are cut down just below the lower branches, about four feet from the ground, and well manured. The branches which sprout the following season are thinned, and made to grow in a perpendicular direction. The process of cutting the trunk within a short distance of the ground is repeated every four or five years, and, as a general rule, they are not stocked until the second year after this operation.

Sometimes the husbandman finds a tree which the insects themselves have reached, but the usual practice is to stock them, which is effected in spring with the nests of the insect. These are about the size of a fowl's head, and are removed by cutting off a portion of the branch by which they are attached,

leaving an inch each side of the nest. The sticks with the adhering nests are soaked in unhusked rice-water for a quarter of an hour, when they may be separated. When the weather is damp or cool, they may be preserved in jars for a week; but, if warm, they are to be tied to the branches of the tree to be stocked without delay, being first folded between leaves. By some the nests are probed out of their seat in the bark of the tree without removing the branches. At this period they are particularly exposed to the attacks of birds and require watching.

In a few days after being tied to the tree the nests swell, and innumerable white insects the size of nits emerge and spread themselves on the branches of the tree, but soon with one accord descend towards the ground, where, if they find any grass, they take up their quarters. To prevent this the ground beneath it is kept bare, care being taken also that their implacable enemies, the ants, have no access to the tree. Finding no congenial resting-place below, they reascend and fix themselves to the lower surface of the leaves, where they remain several days, when they repair to the branches, perforating the bark to feed on the fluid within. From nits they attain the size of lice; and having compared it to this the most familiar to them of all insects, our Chinese authors deem further description superfluous. Early in June they give to the trees the appearance of hoar frost, being *changed into wax*. Soon after this they are scraped off, being previously sprinkled with water. If the gathering be deferred till August, they adhere too firmly to be easily removed. Those which are suffered to remain to stock trees the ensuing year secrete a purplish envelope about the last of August, which at first is no larger than a grain of rice; but, as incubation proceeds, it expands and becomes as large as a fowl's head, when the nests are transferred, in Spring, to other trees, one or more of each, according to their size and vigor, in the manner already described. In being scraped from the trees the crude material is freed from its impurities, probably the skeleton of the insect, by spreading it on a strainer, covering a cylindrical vessel, which is placed in a cauldron of boiling water; the wax is retained in the former vessel, and, on congealing, is ready for market. The *peh-lah*, or white wax, in its chemical properties, is analogous to purified beeswax, and also spermaceti, but differing from both, being in my opinion an article perfectly *sui generis*. It is perfectly white, translucent, shining, not unctuous to the touch, inodorous, insipid, crumbles into a dry, inadhesive powder between the teeth, with a fibrous texture resembling feldspar; melts at 100° Fahr.; insoluble in water; dissolves in essential oil, and is scarcely affected by boiling alcohol, the acids or alkalis.

The aid of analytical chemistry is needed for the proper elucidation of this most beautiful material. There can be no doubt it would prove altogether superior in the arts to purified beeswax. On extraordinary occasions, the Chinese employ it for candles and tapers. It has been supposed to be identical with the white wax of Madras; but as the Indian has been found useless in the manufacture of candles (Dr. Pearson, *Philosophical Transactions*, vol. xxi,) it cannot be the same. It far excels. It far excels also the vegetable wax of the United States (*Myrica Conifera.*)

Is this substance a secretion? There are Chinese who regard it as such—some representing it to be the saliva and others as the excrement of the insect. European writers take nearly the same view; but the best native authorities expressly say that this opinion is incorrect, and that the animal is changed into wax. I am inclined to think that the insect undergoes what may be styled auraceous degeneration, its whole body being permeated by the peculiar product, in the same manner as the *Coccus Cacti* is by carmine. It costs at Ningpo from 22 cents to 35 cents per pound. The annual product of this humble creature in China cannot be far from 400,000 pounds, worth more than $100,000.

CHINESE AND AZTEC PLUMAGERY.

BY D. J. MACGOWAN, M. D.

Those natives of Northeastern Asia, who in modern times have been drifted to the opposite shores of the Pacific, were generally fishermen, mariners or persons unacquainted with mechanical operations; and it is altogether probable that from the period of the first disaster by which they were driven to America, to that of the last shipwreck on the coast, very few artisans and no scholars have in this manner changed continents. Nor, judging from the low state of civilization of the more Northern peoples, could it be expected that adventurers by the way of Behring's Straits or the Aleutian Islands would carry with them a knowledge of any arts but the most simple and rudimentary. Hence we shall look in vain for many resemblances in the industrial operations of the dwellers on the eastern and western coast of the great ocean. Nevertheless, there is reason to believe that were we better acquainted with the state of arts among those farthest advanced in civilization in Polynesia and America, we should recognize modes of operation identical with those of China, too numerous to be accounted for, either as coincidences or as independent inventions. A striking illustration is furnished by Captain Wilkes,* who gives a drawing and description of an instrument for drilling holes, which he found in use by the inhabitants of Fakaafo, at Bowditch Island. This is undoubtedly a Chinese implement, being the most ingenious of all their tools. It is employed for perforating small holes by all workers in metals, but appears to most advantage in the hands of needle makers, who use it for drilling eyes in the small wires of which these are made.

Whether Plumagery, or the art of working in feathers, which was formerly practiced in this part of the world, and also by the Aztecs of Central America, originated with the Asiatics, or Americans, or both, must be left to conjecture; in any view of the case the fact is invested with interest. Attention was attracted to this subject by perusing the chapter devoted to an inquiry into Aztec civilization in Prescott's History of the Conquest of Mexico, where the distinguished historian shows that the ancient Mexicans excelled in the arts of plumagery and jewelry, in both of which they appear to have followed the same methods that are adopted by the Chinese.

Confucius informs us that in remote antiquity, ere the art of weaving silk or hemp was understood, mankind were clothed in the skins of beasts and feathers. How the latter were held together is not stated, but it must have been in a rude manner by cords or thread; at a later period, feathers were in general demand as ornaments to banners and articles of attire, and subsequently for the manufacture of door screens and caps. Tradition states that

* Narrative of the U. S. Exploring Expedition, by Captain Wilkes, U. S. N. Vol. V, p. 17.

arments made of feathers and resembling fur dresses were presented to the Emperor Shan-shau, who reigned twenty-five centuries before our era. The earliest allusion to robes *woven* with feathers occurs in the history of the Tsin dynasty. In the year 272, A. D., Dr. Ching, the Court physician, presented the Emperor with a gown made of feathers from the golden-headed pheasant. His Majesty being the founder of a new dynasty, was anxious to induce economical habits among his subjects; he therefore immediately ordered the splendid garment to be publicly burnt before the palace door, and issued, on the following day, stringent prohibitions against the presentation of articles of luxury.

The Emperor Wuti, who flourished in the latter part of the fifth century, had a son who was notorious for his extravagance, having among other costly articles a robe woven with peacocks' feathers. History further informs us that it was the custom of Emperors to make presents every eleventh month of robes made out of the feathers of the variegated king-fisher, to certain ministers of State. Tai-tsung, A. D. 976, changed the custom so far as to substitute silk for plumagery. Again, at a later period, the imperial records relate that the Princess Gan-luh engaged a skilful artificer to collect feathers of every description to make of them two dresses which should, when looked at in front, present one color, and when sideways another, and when held up to the light, a third. When completed she presented them to the Empress, and they were so much admired that the fabric became very fashionable among officers and people; so much so, that the hills and forests were swept clean of down and feathers, and vast numbers of birds were ensnared for their plumage.

More instances might be adduced to show that, at different periods extending through many centuries, plumagery was well understood. Garments thus manufactured were necessarily rare, their use being confined to persons of rank and wealth; and it may be doubted if even among the Aztecs whose country, unlike China, had vast forests crowded by the feathered tribe, the material was so abundant as to allow the inhabitants generally to shine in borrowed plumes.

The foregoing examples, drawn from the popular Encyclopædias, throw no light on the mode of manufacturing this elegant material. Something, however, may be gathered on this subject from a work styled "New Conversations on Things Seen and Heard in Canton," by a native of Su-chau, who spent many years in that city in a mercantile capacity in the latter part of the last century. In a short section devoted to *Bird Clothes* he says: "There are several kinds of birds the feathers of which are woven into a peculiar cloth by the southern barbarians. Among them is the celestial goose-velvet. The foundation of the fabric was of silk, into which the feathers were ingeniously and skilfully interwoven on a common loom, those of crimson hue being the most expensive. Of these wild-goose feathers two kinds of cloth were made: one for winter, the other for summer wear. Rain could not moisten them. They were called "rain satin" and "rain gauze," respectively. Canton men imitated the manufacture, employing the feathers of the common goose and blending them with cloth. This fabric, though inferior in quality, was much cheaper. Goods of the same description were also brought from Hoh-lih (a State described by geographers as being adjacent to Samarcand, perhaps Bokhara) made of birds' feathers. They were twilled, the crimson-colored being most valued. The article was too heavy for garments. The Cantonese also learned to imitate this, making it like plain silk, and inferior to that from abroad. Peacocks' feathers are employed by Canton manufacturers in making variegated threads, which are used in making beautiful capes for females." Another writer states that a tribe of the Miauby in Kwang-si, manufactures cloths from the fine down taken from the abdomen of geese. The down and tufts of birds were probably the materials woven into textile-like fabrics.*

From the above, it would appear that the Chinese have lost the art of weaving feathers. Plumagery is still practiced, however, in the decoration of metallic ornaments worn by all classes of females, chiefly on the head. When

---

* Very showy jackets are sometimes met with at Ning-po, manufactured in the north-western provinces from peacock's feathers. (Polyplectron Emphanum?)

silver is employed, the article is first coated with gold. The gaudy lustre of the gilt is softened, by laying over portions of it a covering of blue feathers representing flowers, insects, birds, and the like, which imparts indescribable beauty to the silversmith's elaborate filigrees. The art appears to most advantage as practiced by artificers, whose occupation is the manufacture of garlands, chaplets, frontals, tiaras and crowns of very thin copper, on which purple, dark and light-blue feathers of gorgeous brilliancy are laid with exquisite taste and skill. From the size of these ornaments great scope is afforded for the display of various figures.

Sometimes two dragons extend from below the lobes of the ears, meeting above the forehead, the variegated scales of which are represented by minute portions of feathers of various hues ; at others, beautiful flowers are interspersed with elegant mosaic, and then again the head attire appears animated, as with every turn of the fair one, tiny genii, birds and insects are set in motion from springs and wires which retain them in the midst of the fairy-like garland. A more tasteful, elegant, or gorgeous blending of art and nature than is exhibited in one of these head dresses, perhaps no ingenuity has yet devised. To increase the effect, these ornaments are studded with pearls, produced cheaply and in great abundance by artificial means in a fresh-water mussel.

Commoner articles, such as ear-rings and brooches for caps, are generally made of a small wreath of the forget-me-not, encircling one of these pearls.

Half a dollar will purchase one of these when of silver and a few cents the copper ones. The most expensive head dresses cost less than five dollars unless of silver.

As this elegant art has not hitherto attracted the attention of foreigners, the mode of procedure should be described. This may be done in a few words.

On the table at which the workman sits, he has a faiencelus of feathers, a small furnace with a few embers for keeping warm a cup of glue, a small cutting instrument like a screw-driver, a pencil or brush, and the articles, either silver, gilt, copper, tinsel or pasteboard, which are to be feathered.

The thumb and index finger being smeared with glue, the feathers are gently drawn between them, which stiffens the barbs, causing them to adhere firmly together; and when dry the perpendicular blade is drawn close to the shaft, dividing it from the barbed portion. Holding this cutting implement as in writing *a la Chinoise*, the artist, by pressing on the strips of barb with the knife, cuts them into the desired size and shape, which is a work of some delicacy, the pieces being very small, in the form of petals, scales, diamonds, squares and the like, and requiring to be of same size as the particular spot on which they are to be laid. Besides fingering this tool in the manner described, he holds the pencil nearly as we do the pen, dips it into the glue, brushes the spot to be covered, then expertly reversing it, touches with its opposite point a tiny bit of feather, which is thus lifted up and laid on the part for which it was fitted. Care is requisite also in giving a proper direction to this twilled work, for such, of course, is the appearance presented by the barbs.

The feathers most in demand for this purpose are from a beautiful species of *Alcedo*, brought from the tropical regions of Asia ; they are employed for silver articles. King-fishers, of coarser plumage and less brilliant hues, found throughout the country, are used for ornaments made of copper or pasteboard. Blue always greatly predominates over lighter or darker shades, relieved by purple, white or yellow.

Whether Aztec silversmiths, whose ingenuity is so much lauded by the old Spanish chronicles, practiced this branch of plumagery or not, is uncertain. There is reasons to believe that what is said of imitation of their animals with moveable wings or limbs, of their representing scales of fish alternately of gold and silver, were nothing more than what is now done by the same craft in China, and which were esteemed very marvellous by Sir J. Mandeville (*Voiage et Travaile,*) motion being communicated by wires and springs, and colors impar-

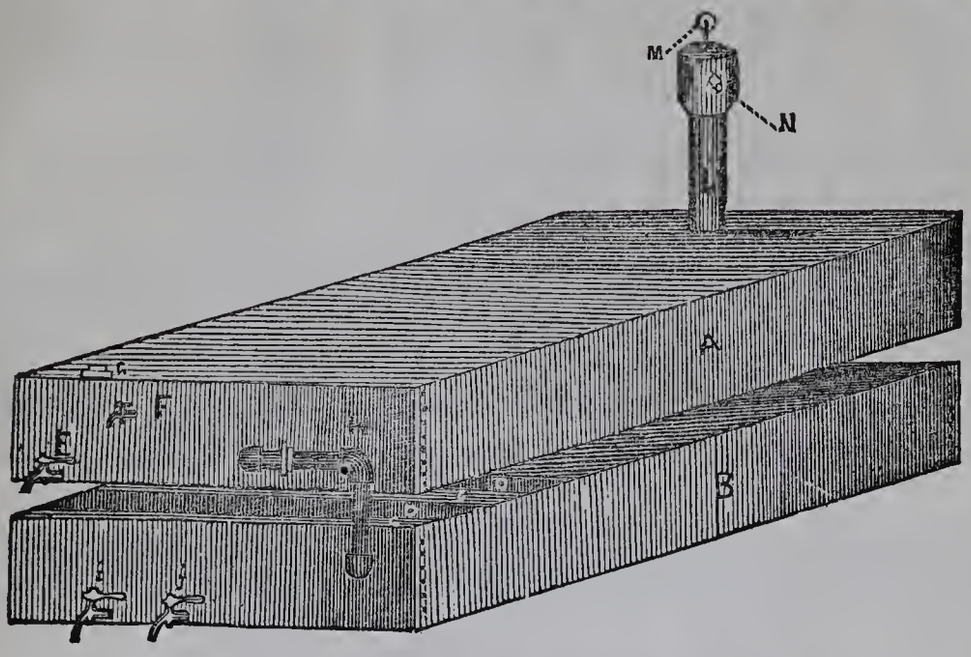
ted by the plumage of choice birds. The construction of automata proper, requires a knowledge of horological mechanism, never attained by either Chinese or Aztecs. Plumagery doubtless attained a far higher degree of excellence in Central America than in China, owing to the greater variety and extreme abundance of the feathered tribe in the dense and luxuriant forests of Mexico. Yet it is not likely that feather fabrics were so easily manufactured as to be worn by other than the nobles and affluent, to whom in China their use was confined. Had the Chinese been as destitute of textile fabrics as the Aztecs, they would unquestionably have engaged in plumagery with greater success.

INDEX TO ADVERTISEMENTS.

Ætna Iron Works.....ii
Agricultural Machinery.....xxxv
Atmospheric Gas Company.....i
Badger, Wm. G.....Inside back cover
Bellingham Bay Coal Company.....xxviii
Betts, Wm. M. and Brother.....xl
Black Diamond Coal Mining Company.....xxviii
Bonney, O., Jr.....xiii
Boston Cracker Bakery.....xxx
Bradley & Rulofson.....xxi
Brass and Bell Foundry.....xli
Brittan, Holbrook & Co.....xliii
California Assay Office.....xxvi
California Billiard Table Manufactory.....xliv
California Brass Works.....vii
California Tool Works.....xxi
Chenery, Souther & Co.....xx
City Paving Company.....xxxvii
Coffee, Spices, etc.....xliii
Denniston, Edward G.....xxi
Dewey & Co.....xxxiv
Dietrich, W. K.....xxx
Eberhart & Lachman.....xi
Elliptic Sewing Machines.....xvi
Empire Foundry.....xv
Erlin, G.....iii
Eureka Wrought Iron Works.....xxv
Finke, A.....xxii
Francis & Valentine.....xl
Garratt, W. T. & Co.....xli
Gracier & Johnson.....xxxv
Haines' Improved Gang Plow.....xxxv and xxxvi
Hallet, Davis & Co's Pianos.....Inside of back cover
Hallidie, A. S.....xvii
Hanscom & Co.....ii
Hucks & Lambert.....xxvi
Hutchings & Finlayson.....xxv
Huntington, F. A.....vii
Kimball Car and Carriage Manufacturing Company.....viii
Kittredge, Jonathan.....v
Larkins & Co.....xxii
Lehman, R. & Co.....xxx
Locke & Montague.....xliv
Macken, James.....xxvii
Marden & Myrick.....xliii

Mechanics' Institute.....xlii
Mission Candle Works.....x
Mission and Pacific Woolen Mills.....ix
Moynihan & Aitken.....xi
Morse's Photograph Gallery.....xxiv
Musical Instruments and Sheet Music.....Inside back cover
McKibbin, Wm.....xxv
Nelson & Doble.....x
Occidental Foundry.....xli
Pacific Oil and Lead Works.....iv
Pacific Pottery.....xxvi
Pacific Ramie Company.....xxvii
Pacific Rolling Mills Company.....iv
Pacific Rural Press.....xxxiv
Pacific Saw Manufacturing Company.....Inside front cover
Pacific Stone Company.....xii
Pacific Wood Preserving Company.....xxxiii
Palmer, W. J. T. & Co.....viii
Phoenix Iron Works.....v
Phoenix Oil Works.....xxv
Pioneer Kid Glove Factory.....xxviii
Pollard & Carvil Manufacturing Company.....xix
Price, M.....xv
Printing and Bookbinding.....xl
Risdon Iron and Locomotive Works.....vi
Roman, A. & Co.....xviii
Rosenbaum, Fr. H. & Co.....xxxi
San Francisco Cordage Company.....ix
San Francisco Carriage Spring Works.....xl
San Francisco Last Factory.....xx
San Francisco Plating Works.....xxi
Samuels, D.....xxviii
Savage & Son.....xv
Scientific Press.....xxxiv
Seamans, Job M.....xxxi
Sherman & Hyde.....Inside back cover
Spaulding, N. W.....Inside front cover
State Investment and Insurance Company.....xlii
Steiger & Boland.....xli
Steele, James G. & Co.....xiv
Stetefeldt Furnace.....xxxii
Strahle, Jacob & Co.....xliv
Taber & Cunningham.....xxv
Taylor, F. B. & Co.....xvi
Taylor, J. W. & Co.....xxiii
Taylor, S. P. & Co.....xiii
Tobin, Davisson & Co.....xxiii
Truworthy, F. M.....xxiv
Watkins, C. E.....xxix
Weed & Kingwell.....vii
Weichhart, J.....xxi
Westley & Dierck.....xxxviii and xxxix
Westley's Patent Furniture.....xxxviii and xxxix
Winter, Maurer & Co.....x
Yosemite Art Gallery.....xxix

Ahead of all Competitors!



GAS! GAS! GAS!!

Atmospheric Gas Co.'s "Carburetor"

Received the ONLY AWARD issued by the Mechanics' Fair of 1871, at San Francisco.

The Cheapest, Safest and most Brilliant Light, for less than one-half cent per hour,

Which is cheaper than Candles, Lamps, Coal Gas, or any other light produced from any substance.

Every Store, Church, Hotel, Public Building or Private Residence

IN THE COUNTY SHOULD HAVE ONE.

No Machinery, Weights, Pulleys, Pumps, or other Mechanical Contrivances

CONNECTED WITH THE

Atmospheric Gas Co.'s "Carburetor."

It is automatic and self-regulating, and only requires attention once every sixty days.

No Extra Rates of Insurance.

ALL THE INSURANCE COMPANIES ACCEPT IT AT EQUAL RATES.

Send for printed Testimonials of nearly two hundred persons that have had them in use for over one year, including Thomas Bell, Esq., President San Francisco Gas Co., and J. B. Frisbie, Esq., owner of Gas Works, Vallejo.

THOMAS WALLACE, Superintendent, 534 California St., S. F.

J. O. HANSCOM, }
H. S. SMITH. }

{T. PENDERGAST,
{W. W. HANSCOM.

HANSCOM & CO.

ÆTNA IRON WORKS

S. E. Cor. Front and Tehama Sts., San Francisco.

Practical Machinists and Iron Founders.

MANUFACTURE

STEAM ENGINES, SAW MILLS, FLOUR MILLS

And Quartz Machinery of all kinds.

Dunbar's Improved Self-Adjusting Piston Packing,

Of which there are now over two hundred in use on the Pacific Coast. Requires no springs or screws; is always steam tight; without excessive friction, and never gets slack or leaky.

HANSCOM'S CRUSHER, the best of the kind now in use in this State or anywhere else.

HANSCOM'S IMPROVED STEAM PUMP,

For Feeding Boilers and general purposes. Unexcelled for compactness, simplicity and efficiency.

Carvalho's Steam Superheater

NO STEAM BOILER SHOULD BE WITHOUT IT.

All kinds of PATENT AMALGAMATORS, CONCENTRATORS, &c. furnished to Order.

HAYES' STEAM PUMPS ALWAYS ON HAND.

TYLER'S IMPROVED WATER WHEEL,

Giving greater power at lower cost, than any wheel in use. Circulars giving full tables, sent to any one desiring.

Sole Manufacturers of the Pendergast White Iron Stamp Shoes & Dies.

None genuine unless obtained from us. Every one warranted.

Ornamental Castings made equal to those of Berlin.

House Work, Store Work, and Light Castings of all kinds,

MANUFACTURED WITH PROMPTNESS.

PARTICULAR ATTENTION GIVEN TO DRAWINGS AND SPECIFICATIONS OF MACHINERY, WHICH WILL BE MADE TO ORDER.

PLANS FOR WORK ORDERED FROM US FURNISHED GRATUITOUSLY.

The Patronage of the Public is Respectfully Solicited.

OFFICE AND SCHOOL FURNITURE,

Desks of all kinds, Church, Hall and School Settees, Black Boards, Map Stands, Chart Racks, Easels, Pointers, Dumb Bells, Black Boards, Rubbers, Liquid Slating for Black Boards, Ink Wells, and everything pertaining to School Supplies.

TEACHERS, COUNTY SUPERINTENDENTS AND TRUSTEES will find all their orders promptly filled with articles that will give entire satisfaction, both as regards workmanship and price.

Office Furniture of every variety made to order.

Office, 607 Clay Street, near Montgomery,

C. ERLIN, Proprietor.

Pacific Rolling Mill Co.

CAPITAL STOCK, $1.000,000.

Established for the manufacture of Railroad and Merchant Iron. Every variety of Shafting, including all sizes of Steamboat Shafts, Cranks, Pistons, Connecting Rods, &c. Car and Locomotive Axles and Frames, and Hammered Iron of every description and size.

OFFICE:

Nos. 3 & 5 FRONT STREET, SAN FRANCISCO, CAL.

Orders addressed to Pacific Rolling Mill Co. will have prompt attention.

Highest Price paid for Scrap Iron.

President,	WM. ALVORD.
Vice President,	L. B. BENCHLEY.
Superintendent,	B. P. BRUNNER.
Secretary,	SAML. I. C. SWEZEY.

PACIFIC OIL AND LEAD WORKS

CAPITAL STOCK, $600,000.

Established for the manufacture of Linseed, Castor and other Oils, and of White Lead, Zinc and other Paints. Works are now in operation, and prepared to furnish Oils of first quality, and quantity sufficient for the supply of the Pacific Coast. Also, Oil Cakes and Meal in quantities required.

Highest price paid for Flax Seed delivered at the Company's Works, King Street, near Third.

Office—Nos. 3 and 5 Front Street, San Francisco, Cal.

Orders addressed to "Pacific Oil and Lead Works," will have immediate attention.

OFFICERS.

President,	JOHN BENSLEY.
Vice President,	L. B. BENCHLEY,
Superintendent,	B. P. BRUNNER.
Secretary,	SAML. I. C. SWEZEY.

Phoenix Iron Works,

JONATHAN KITTREDGE, Proprietor,

18 and 20 Fremont Street, near Market,

SAN FRANCISCO.

Two Gold Medals awarded by the Mechanics' Institute Exhibition,

1869–1871,

FOR THE BEST SAFES.

Manufacturer of

Iron Doors,

SHUTTERS,

And all kinds of

House Smith Work,

FORGING AND

Machine Work.

BANK VAULTS,

Monitor Safes,

FIRE

AND

Burglar Proof

SAFES.

WELDED, STEEL AND WROUGHT IRON

SAFES

Constructed in the most improved manner, using Welded Steel and Wrought Iron, with conical steel bolts impenetrable to Drill, Wedge or Sledge. Owing to their peculiar construction, their strength is superior to anything imported from the East.

Money Boxes & Silver Safes of every Description

MADE TO ORDER.

SAFES LET BY THE MONTH.

MANUFACTURER OF

BANK LOCKS.

A FINE STOCK OF

Fire and Burglar-Proof Safes

CONSTANTLY ON HAND.

Salesroom, 315 & 317 Pine St., San Francisco.

WM. H. TAYLOR, President. JOSEPH MOORE, Supt.

THE RISDON

Iron and Locomotive Works,

LOCATION OF WORKS,

S. E. Corner Beale and Howard Streets, San Francisco.

MANUFACTURERS OF

STEAM ENGINES,

Quartz and Flour Machinery.

SPECIAL FOUNDRY FOR

RAILROAD CAR WHEELS,

In which we make special castings, requiring extra quality of metal, with or without chilled faces, such as cams, lifters and dies.

BOILER WORK OF ALL KINDS.

High or Low Pressure Boilers.

SHEET IRON PIPES

For Mining Purposes, or for City Water Works.

The extensive experience of this branch enables them to guarantee heavy heads of water, with the least weight of iron.

The R. I. W. Co. being only of a few years' standing, have had all their patterns made from the latest plans, and of the most improved construction.

WEED & KINGWELL,

California Brass Works,

125 FIRST ST., opposite Minna,

SAN FRANCISCO.

MANUFACTURERS OF ALL KINDS OF

Brass, Composition, Zinc & Babbit Metal Castings

Church and Steamboat Bells

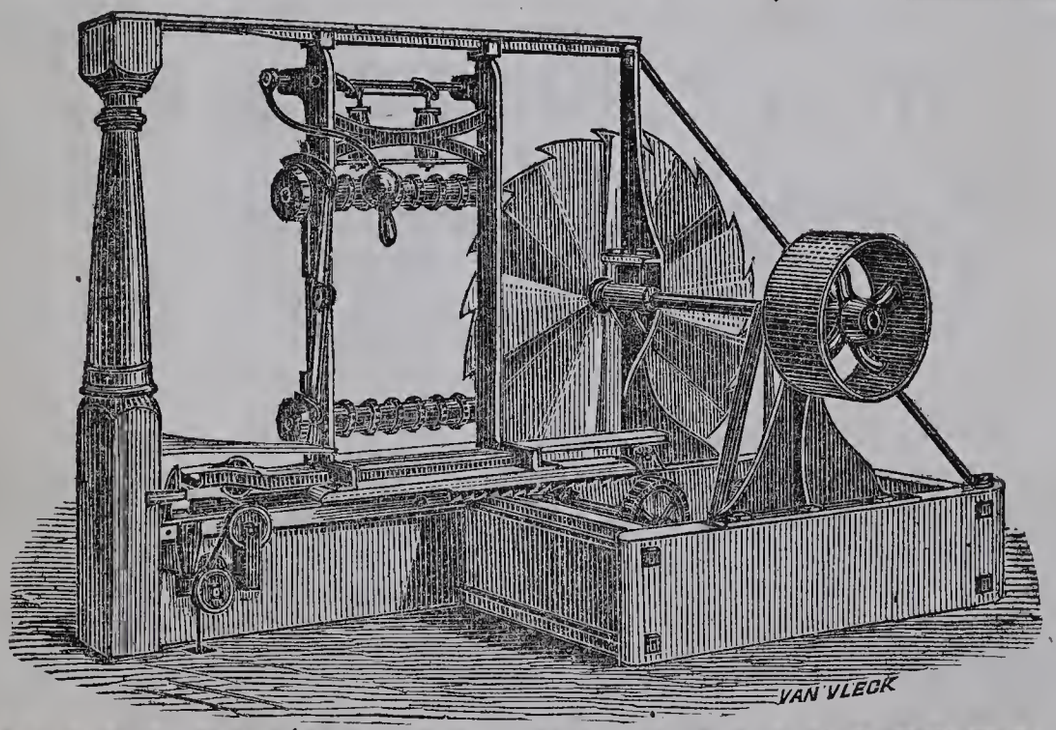
ON HAND AND MADE TO ORDER.

Also, a Full Assortment of STEAM and WATER COCKS and VALVES, HYDRAULIC PIPES, NOZZLES and HOSE COUPLING, &c., &c.

Brass Ship Work, Spikes, Sheathing. Nails, Rudder Braces, etc.

FURNISHED WITH DISPATCH.

Highest Price given for Old Copper and Brass.



SHINGLE MACHINE,

MANUFACTURED AND FOR SALE BY

F. A. HUNTINGTON,

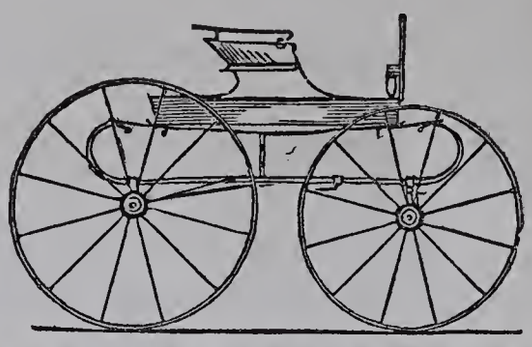
Nos. 18 and 20 Fremont Street, S. F.

MANUFACTURER OF

SHINGLE, LATH & PICKET MACHINES

Flax Breaks, Steam Engines, and Saw Mill Machinery of all kinds.

GENERAL JOBBING PROMPTLY ATTENDED TO.



THE KIMBALL

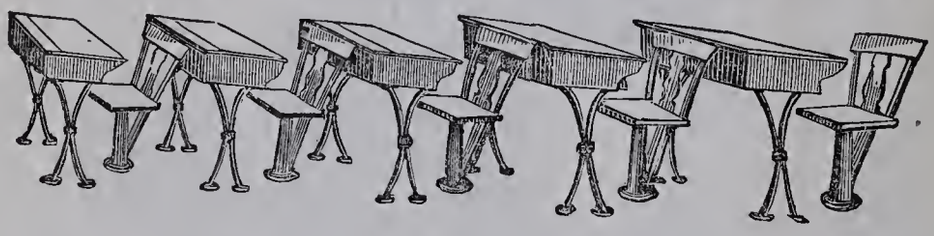
Car & Carriage Manufacturing Co.

CORNER FOURTH AND BRYANT STREETS,

SAN FRANCISCO.

Have on hand of their own manufacture, and consigned to them from the best Eastern makers, for sale, VEHICLES of all kinds, styles and sizes. Particular attention is called to our *Celebrated Wood C Spring Buggies, Carriages, Carryalls & Rockaways*, which are rapidly superseding the old-fashioned makes and styles, on account of their remarkable lightness and durability. The ease with which they carry is unequalled. HAVING THE LARGEST AND MOST COMPLETE MANUFACTURING ESTABLISHMENT OF ITS KIND IN THE UNITED STATES, with large supplies of the best seasoned material on hand, we are prepared to build to order, on short notice, and in all cases guarantee the material and workmanship.

W. J. T. PALMER & CO.



Manufacturers of every description of

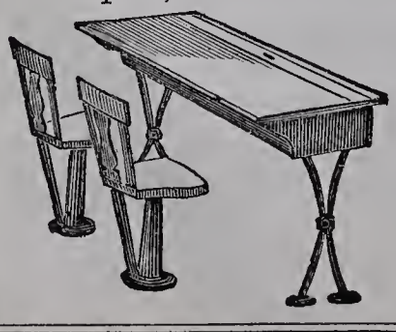
OFFICE FURNITURE

And all kinds of Cabinet Ware,

SALESROOM, 323 CALIFORNIA ST., near Sansome.

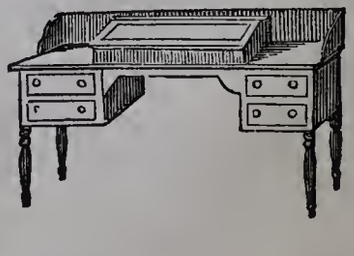
Manufactory, 105 & 107 Mission St.

Near Spear, SAN FRANCISCO.



School Furniture

MADE TO ORDER.



Mission & Pacific Woolen Mills

OFFICE AND WAREHOUSE,

517 and 519 Market Street, near First.

FACTORY, FOLSOM ST., bet. 15th & 16th Streets. S. F.

MANUFACTURERS OF THE CELEBRATED

SUPERIOR FAMILY BLANKETS,

Flannels, Cassimeres, Knit Goods, Flannel Clothing, Etc.

MILITARY CLOTHING MANUFACTURED TO ORDER

Horse and Sluice Blanketing,

Buggy Robes, Traveling Shawls & Blankets, Ladies' & Misses' Shawls

ETC., IN GREAT VARIETY.

S. L. SIMON, Secretary. *DONALD McLENNAN, Manager.*

San Francisco Cordage Co.,

MANILLA ROPE OF ALL SIZES;

ALSO,

Bale Rope & Whale Line Constantly on hand.

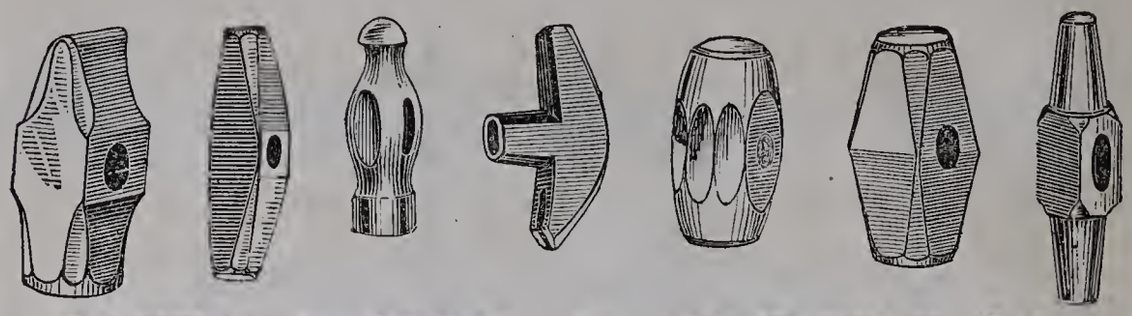
Mining Rope of any Size and Length,

TARRED OR UNTARRED,

MANUFACTURED TO ORDER.

TUBBS & CO., AGENTS,

611 and 613 Front Street.



NELSON & DOBLE,

Agents for Thos. Firth & Son's

CAST-STEEL,

Shear, Spring, German, Plow, Blister, Toe-Calk Steel, and Files.

Manufacturers of MINERS' DRILL HAMMERS AND SLEDGES, STONE SLEDGES, EGG FACE HAMMERS, DRILL SPOONS, DOBLE'S PATENT TAMPING BARS, MILL PICKS, SLEDGES, HAMMERS, PICKS, STONE CUTTERS', BLACKSMITHS' AND HORSE-SHOERS' TOOLS.

13 and 15 Fremont Street,

Near Market, San Francisco.

M. MORGENTHAU, HENRY S. WINTER. } { FRED MAURER, ISIDOR LAVENSON.

MISSION CANDLE WORKS

OF

WINTER, MAURER & CO.,

SAN FRANCISCO, CAL.

MANUFACTURERS OF

Solar Sperm, Chemical Wax, Coach & Hotel Candles

ALSO, ALL QUALITIES OF SOAPS.

CASH PAID FOR TALLOW.

Factory, on 16th Street, bet. Folsom and Harrison.

Office at M. Morgenthau's, 108 Bush St., near Battery.

MOYNIHAN & AITKEN,

GENERAL

BOILER MAKERS,

311 & 313 Mission St., bet. Fremont and Beale,

SAN FRANCISCO.

The members of this firm have been engaged in the

MANUFACTURE AND WORKING

OF

STEAM BOILERS

For a period varying from twenty-five to thirty years, and their Shop is the

Only Exclusive Boiler Making Establishment

ON THE PACIFIC COAST.

Being Practical Boiler Makers, and giving their whole time and attention to their business, they are enabled to say that the experience and knowledge which the members of this firm possess, warrant them in soliciting a fair share of public patronage, which, by attention and perseverance in business, with a due regard to interests of their friends, they will endeavor to preserve.

EBERHART & LACHMAN,

MANUFACTURERS OF

California Sparkling Wines.

Sweet and Dry Champagnes,

SPARKLING

Muscatel and Catawba.

ALSO,

White & Claret Wines

ALL KINDS AND ALL AGES,

Angelica, Muscatel, Madeira, Port, Sherry, Hock, Mount Vineyard, Malaga, Sweet and Dry Catawba, etc.

GRAPE BRANDIES,

1 to 5 years old.

All our Wines and Brandies are made exclusively from Mountain Grapes.

PRINCIPAL DEPOT,

Cor. First & Market Sts.

SAN FRANCISCO.

The Pacific Stone Company.

RANSOME'S

PATENT STONE

FOR WHICH

PRIZE MEDALS

Of the Great Exhibition of 1851, and of the International Exhibition of 1862, and Mechanics' Institute Exhibition of San Francisco, 1871,

WERE AWARDED FOR EXCELLENCE AND DURABILITY;

SUITABLE FOR BUILDING PURPOSES, DECORATIVE WORK GENERALLY, VASES, FOUNTAINS, BALUSTRADES, CHURCH AND CEMETERY WORK, ETC.

Ransome's Indurating Process,

FOR

Hardening and Preserving Natural Stones.

GRINDSTONES, WATER AND ACID FILTERS.

Cor. Greenwich and Octavia Streets,

SAN FRANCISCO.

S. P. TAYLOR & CO.,

Paper Manufacturers,

Warehouse, 406 Clay Street, San Francisco.

STRAW PAPERS,
MANILLA PAPERS,
PRINTING PAPERS,
COLORED PAPERS,
PAPER BAGS,
TWINE,
SEED BAGS, &c., &c.

All Sizes of above Papers on hand and made to order.

Proprietors of the "Pioneer Paper Mill,"

TAYLORVILLE, MARIN CO., CAL.

O. BONNEY, JR.,

MANUFACTURER OF

Agricultural Implements & Wood Working Machinery

BAND SAWS, JIG SAWS,

Shaping Machines, Complete for Running,

ALSO,

Patent Hay Rake, with Extension Teeth

The only Rake that gathers all the Hay on rough as well as smooth ground, free from dirt and dust.

Patent Grain Lifters, for fallen Grain,

DRAPER APRONS, GRAIN CARRIERS, &c., &c.

221 MISSION ST., SAN FRANCISCO.

JAS. G. STEELE & CO.

CHEMISTS & APOTHECARIES

Manufacturers and Sole Proprietors of

GLUCOLEIN,

A new and valuable compound of Cod Liver Oil. Glucolein combines all the therapeutic properties of the crude oil, and does not become rancid on exposure, and is prepared from the

BEST FRENCH BROWN COD LIVER OIL.

Glucolein dissolves readily in the stomach and is easily assimilated, very pleasant to take, and does not leave any bad taste in the mouth, nor produce eructation or any unpleasant effects, and easily borne by the most delicate stomach. Glucolein contains a large per cent. of oil, and from the facts above stated, one teaspoonful is more efficacious than one tablespoonful of crude oil. Put up in glass jars.

WINE OF PEPSINE OR RENNET WINE,

A new and efficacious remedy for Dyspepsia, Gastralgia, etc. Prepared from fresh rennets, according to the formula of Dr. Geo. Ellis, and presenting this valuable digestive aid in an attractive form, both as regards taste and appearance. For the past few years this medicine has been used with great success by the most enligtened physicians of Europe and America in Dyspepsia, Gastralgia, in slow and difficult digestions following Fevers, and also in Consumption and other Chronic Diseases.

Messrs. STEELE & CO. make a specialty of manufacturing Mineral Waters, to which the attention of Physicians and the public is invited. The waters are identical in composition with those produced at the Springs, possess their usual saline qualities, have a lively effervescence, and are quite agreeable to the taste.

CONSTANTLY ON HAND,

VICHY, KISSENGEN, SELTZER & CARLSBAD WATERS

For Sale by the Bottle and by the Dozen.

Physicians and others at a distance, ordering goods from us, can depend upon having their orders filled with the same regard to QUALITY and PRICE, as though obtained in person; and we feel confident of giving satisfaction in every case.

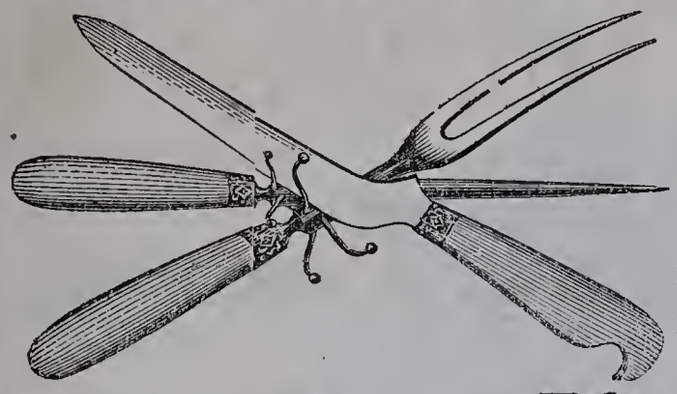
JAS. G. STEELE & CO.

Chemists and Apothecaries,

No. 521 Montgomery Street, between Clay and Commercial,

SAN FRANCISCO.

Premium Cutler



First Premium & Medal of Mechanics' Institute, 1871.
First Premium & Medal of Mechanics' Institute, 1869.
First Premium & Medal of Mechanics' Institute, 1868.
First Premium of Mechanics' Institute in 1865.
First Premium of Mechanics' Institute in 1864.
First Premium of Mechanics' Institute in 1860.
First Premium of Bay District Society in 1860.
First Premium in New Orleans, 1870.

TO

M. PRICE,

FOR

Home-Made Cutlery,

415 KEARNY STREET,

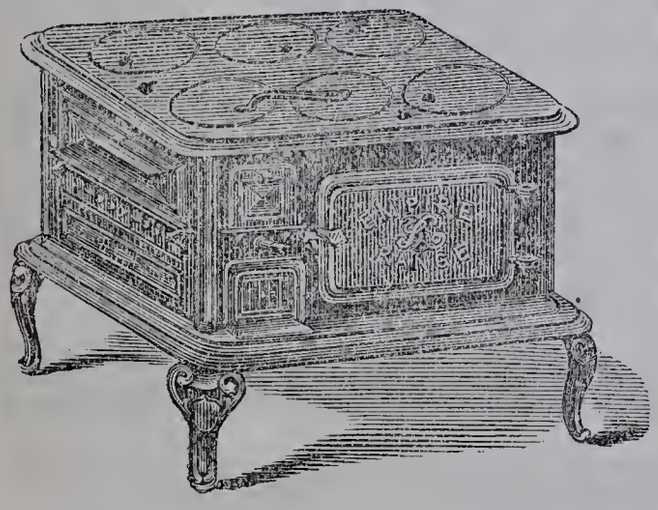
Between Pine and California, SAN FRANCISCO.

Razors, Knives, Shears, etc., made to order and Warranted.

PARTICULAR ATTENTION PAID TO JOBBING.

Damaged Cutlery Polished equal to new. Country Orders promptly attended to.

EMPIRE FOUNDRY,



SAVAGE & SON, Prop'rs.

145 Beale & 294 Howard St., S. F.

Manufacturers of the Celebrated

Empire Range.

This Range took the First Premium at the Fairs of the Mechanics' Institute of San Francisco, and State Fair at Sacramento in 1871.

French Ranges, Grates & Fenders

Iron Railings, House Fronts, Steam Engines,

Agricultural and Ornamental Work of every variety.

WATER, GAS, STEAM AND SOIL OR DRAIN PIPE

MANUFACTURED TO ORDER.

CONSTANTLY ON HAND, A LARGE ASSORTMENT OF

Superior Metallic Burial Caskets,

For which a SILVER MEDAL was awarded at the Mechanics' Institute, and a Special Premium at the State Fair of 1871.

Elliptic Sewing Machines

ARE

SIMPLE,

Fast,

DURABLE.

BUY NONE

UNTIL YOU HAVE SEEN

THE

Elliptic.

Send for Circulars and Samples of work.

A. H. SUPLEE, General Agent,

27 SOUTH MONTGOMERY STREET,

GRAND HOTEL, SAN FRANCISCO.

The Downer Machinery & Spindle Oils,

(Manufactured under Letters Patent),

Are unequalled for all lubricating purposes, and are to-day in use and endorsed by all the Railroads and the leading

Woolen Mills, Flour Mills, Quartz Mills, Factories, Machine Shops and Sewing Machine Companies

Throughout this Coast, and are rapidly superseding all other oils in this market. They are clear, light oils, in body are fully equal to sperm, will remain limpid in any climate, as they never chill, and

NEITHER "HEAT OR GUM UP,"

Thus running Machinery positively smooth and cool. After an exhaustive competition with other oils, they were used on all the machinery running in the late

FAIR OF THE MECHANICS' INSTITUTE,

AND AWARDED THE

FIRST PREMIUM.

FOR SALE IN LOTS—AT 80 CTS. PER GALLON—TO SUIT BY THE

OIL HOUSE OF

F. B. TAYLOR & CO.

113 FRONT STREET, BET. CALIFORNIA AND PINE,

SOLE AGENTS FOR THE PACIFIC COAST.

Established in 1852.

A. S. HALLIDIE,

Importer, Dealer and Manufacturer of

IRON & STEEL WIRE ROPE

AND WIRE OF ALL KINDS.

ESTABLISHED 1857.

Office and Depot, No. 519 Front Street.

Sole Proprietor of the

PATENT ENDLESS ROPEWAY, (Wire Tramway,)

For transporting Ores, etc. over mountainous places.

Agent for Pacific Wire and W. R. Manufacturing Co. of California,

AND OF

Rich'd Johnson & Nephew, Wire Manufacturers of Manchester, Eng.

MINING COMPANIES, FERRYMEN AND SHIPMASTERS

Are informed that Wire Rope can be furnished them considerably under the cost of Hemp or Manila, of equal Strength.

Wire Rope does not stretch or shrink by change of weather. It weighs 40 per cent. less than hemp, is less than one-half the diameter, is easily spliced under all circumstances, is as pliable for equal strength, and is from four to five times as durable as the best Hemp or Manila Rope.

FOR HOISTING FROM DEEP MINES, the economy of its application is immense.

The Wire from which my Ropes are made, is manufactured in San Francisco, by the Pacific Wire Manufacturing Company, from the very best of stock.

NOTE.—STEEL WIRE ROPE weighs about 6-10ths of Iron Rope, or ⅓ of Hemp of equal strength. Its extreme lightness saves largely in freight to remote places, and its great durability recommends it for hoisting purposes, etc.

See table of comparitive weights, strengths and sizes of

Steel Wire Rope.		Iron Wire Rope.		Hemp Rope.		Working load of each.
Circumference.	Wt. pr. 100 ft.	Circumference.	Wt. pr. 100 ft.	Circumference.	Wt. pr. 100 ft.	
2 inch.	60 Lbs.	2½ inch	100 Lbs.	6½ inch	166 Lbs.	3,300 Lbs.
2½ "	100 "	3½ "	180 "	8¼ "	284 "	7,000 "

ENDLESS WIRE ROPEWAY, (Wire Tramway,)

Secured by Numerous Patents.

By means of the Ropeway, ores, rock and other material can be transported over mountainous and difficult places where it would be impossible or exceedingly expensive to build a road. It can deliver from 5 to 50 tons per hour, according to capacity, and being carried upon posts above snow and other obstructions, can be used when other modes of transportation would be impossible.

A. S. HALLIDIE, 519 Front Street.

Circulars sent on application.

A. ROMAN & CO.

Publishers, Booksellers,

Importers & Stationers,

HAVE REMOVED TO

No. 11 Montgomery St.

LICK HOUSE BLOCK,

San Francisco.

ROMAN & CO.

We have opened our new store with a choice and well-selected stock of

BOOKS

in every department of Literature.

Commercial and Fancy

STATIONERY,

GOLD PENS,

Albums,

Writing Desks, Portfolios, etc.

Direct and special importation of the newest Parisian, London and American styles in

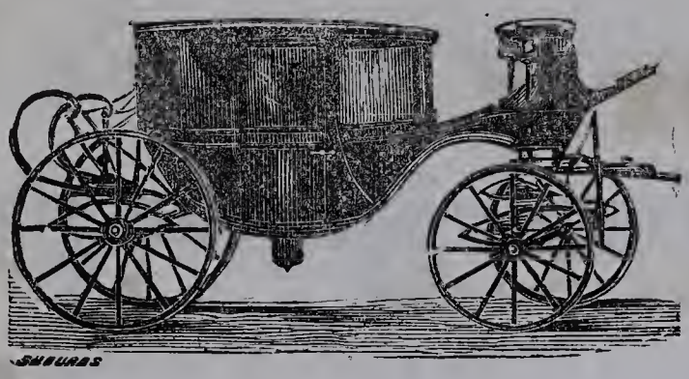
WEDDING STATIONERY.

Wedding, Visiting and Business Cards, Crests, Monograms, Initials and Devices designed and engraved for stamping on note paper, plain or in colors.

A. ROMAN & CO.

Booksellers and Stationers,

No. 11 Montgomery St., Lick House Block, S. F.



POLLARD & CARVILL MF'G CO.

CARRIAGE BUILDERS

Original Manufacturers of the celebrated standard quality of work produced at this Establishment only.

Style, Finish and Durability Unequalled.

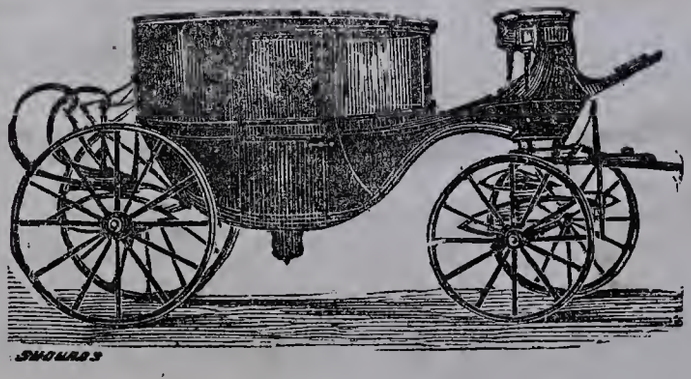
GOLD MEDAL

Awarded by MECHANICS' INDUSTRIAL FAIR, 1871,

FOR THE BEST DISPLAY OF CARRIAGES.

ALSO,

GOLD MEDAL by STATE AGRICULTURAL FAIR, 1871



MANUFACTORY,

CORNER THIRD AND JESSIE STREETS

San Francisco.

CHENERY, SOUTHER & CO.

Wholesale Liquor Dealers

215 and 217 CALIFORNIA STREET,

SAN FRANCISCO.

SOLE AGENTS FOR THE CELEBRATED

Saffell's Cedar Run Bourbon Whiskey.

Premium awarded at the late Industrial Exhibition.

SAN FRANCISCO

LAST FACTORY,

No. 24 CALIFORNIA STREET,

Bet. Davis and Drumm, (Second Floor,) SAN FRANCISCO.

J. LEVEQUE,
PROPRIETOR.

Chas. A. Potter,
AGENT.

(Successor to Shepherd & Russell.)

All kinds of Turning, such as Saddle Trees, Ship Blocks, etc., etc.

Orders from the Interior respectfully solicited, and promptly executed.

LASTS MADE TO FIT THE FEET.

SILVER MEDAL

Awarded at Mechanics' Institute Exhibition of 1871

FOR THE BEST

GOLD & SILVER PLATING,

BY THE

SAN FRANCISCO PLATING WORKS,

655 MISSION STREET,

Between New Montgomery and Third, SAN FRANCISCO.

Every description of goods, (including Table Ware,) from which the silver is worn, re-plated in the best manner. A large assortment of new styles of Plated Ware and Cutlery on hand and for sale at the lowest rates. New and elegant styles of Door Plates and Numbers furnished. The interests of Manufacturers consulted by plating home-made goods at prices that will compete with the East. A liberal discount made to the Trade. Gold-Saving, Silver-Plated Amalgamating Plates, for Miners' use, furnished to order.

All Goods warranted First-Class in every respect.

EDWARD G. DENNISTON, Proprietor.

For the Very Best Photographs,

GO TO

BRADLEY & RULOFSON

429 Montgomery Street, San Francisco.

CLOSED ON SUNDAYS.

CALIFORNIA TOOL WORKS,

BLACKSMITH & MACHINE SHOP,

143 Beale Street, between Mission and Howard, S. F.

All kinds of Edge or other Tools made to order. Tools, if too hard or soft, re-tempered to give satisfaction.

REAPER & MOWING KNIVES COMPLETE.

Sections always on hand, and will be made at the shortest notice.

PARTICULAR ATTENTION PAID TO PUTTING IN ORDER AGRICULTURAL MACHINERY.

JOB GRINDING AND POLISHING BY STEAM.

Orders from the Country promptly attended to. All work warranted. Prices reasonable.

J. WEICHHART, Proprietor.

LARKINS & CO.

MANUFACTURERS OF

CARRIAGES

OF ALL DESCRIPTIONS,

631 & 633 HOWARD STREET, CORNER HUBBARD,

SAN FRANCISCO.

LIGHT TROTTING BUGGIES, DOCTORS' BUGGIES,

And Extension Top Rockaways.

Premiums Awarded at all International Exhibitions in Europe.

FIRST PREMIUM

Awarded at the Mechanics' Fairs in San Francisco, 1869-71

A. FINKE,

MANUFACTURER OF

SPARKLING WINES,

S. E. Corner Mason and Greenwich Sts.,

SAN FRANCISCO.

Tobin, Davisson & Co.

IMPORTERS OF

Yankee Notions, White Goods

HOSIERY & MILLINERY GOODS,

AGENTS FOR

CHENEY BROTHERS'

CELEBRATED

American Gros Grain Silks;

CORNER SUTTER AND SANSOME STS.,

SAN FRANCISCO.

J. W. TAYLOR & CO.

Sole Agents of the Pacific Coast for the

Gutta Percha & Rubber Manufacturing Co.

109 California St., San Francisco.

Patent Carbolized Steam Fire Hose,

Steam and Petroleum Oil Hose,

Suction Hose, Hydrant Hose, Conducting Hose,

Engine Hose, Round Packing, Rubber Belting,

PACKING, VALVES,

Caskets, Pure Vulcanized Sheet Rubber, Fire Buckets.

MORSE'S

Photograph Gallery,

The Palace of Art,

Received the only Silver Medal given for Photographs at the Mechanics' Institute Exhibition of 1871.

FIRST-CLASS ARTISTS ONLY EMPLOYED.

MORSE'S,
417 MONTGOMERY ST., SAN FRANCISCO.

Stencil Plates.

F. M. TRUWORTHY,

318 Front St., San Francisco,

Has all the modern facilities for the prompt and superior execution of all varieties of Stencil Plates and Brands.

STENCIL PLATES, when handsomely executed, present the cheapest and best mode of advertising that can be adopted. This is the experience of all who have used them.

STENCIL PLATES OF EVERY PATTERN cut at this Establishment, in a style unequalled by any other workmen in California.

Merchants and others are invited to call and examine specimens in proof of the above assertion.

Orders by mail, as well as those given in person, promptly executed and forwarded. Parties sending orders by letter are particularly requested to WRITE PLAINLY, and give THE EXACT SPACE THEY WISH THE LETTERS TO OCCUPY.

By close application and superior execution of work during an experience of thirteen years, MR. TRUWORTHY has extended his business to its present proportions. His facilities for rapid and tasteful execution of all work in his line are now far superior to those of any other in this State or in the Union.

Having purchased all the late John Hall's Stencil Tools, Plates and Impressions, and everything pertaining to his business, I am prepared to furnish customers with *fac similes* of his work.

☞ Ink, Brushes and Marking Pots for sale.

C. W. TABER. Z. H. CUNNINGHAM.

TABER & CUNNINGHAM,

BLACKSMITHS,

CARRIAGE AND WAGON MAKERS

JOBBING OF EVERY DESCRIPTION EXECUTED WITH DISPATCH IN A WORKMANLIKE MANNER.

No. 656 Howard Street, near Third,

SAN FRANCISCO.

D. F. HUTCHINGS. J. R. FINLAYSON.

HUTCHINGS & FINLAYSON,

Successors to C. H. HARRISON,

PHŒNIX OIL WORKS

ESTABLISHED 1850,

Store and Manufactory, 517 Front Street,

Between Washington and Jackson,

Manufacturers of and Dealers in

Land, Sperm, Pinnacle, Elephant, Polar, Linseed, Lubricating

AND OTHER OILS.

EVERY ARTICLE WARRANTED.

EUREKA

WROUGHT IRON WORKS,

317 & 319 HOWARD STREET.

Railings, Lintels, Stairs, Bolts, Vaults, Anchors,

Bedsteads, Doors, Locks, Safes, Patent Wheelbarrows, Beams.

WM. McKIBBIN.

MORSE'S

Photograph Gallery,

The Palace of Art,

Received the only Silver Medal given for Photographs at the Mechanics' Institute Exhibition of 1871.

FIRST-CLASS ARTISTS ONLY EMPLOYED.

MORSE'S,

417 MONTGOMERY ST., SAN FRANCISCO.

Stencil Plates.

F. M. TRUWORTHY,

318 Front St., San Francisco,

Has all the modern facilities for the prompt and superior execution of all varieties of Stencil Plates and Brands.

STENCIL PLATES, when handsomely executed, present the cheapest and best mode of advertising that can be adopted. This is the experience of all who have used them.

STENCIL PLATES OF EVERY PATTERN cut at this Establishment, in a style unequalled by any other workmen in California.

Merchants and others are invited to call and examine specimens in proof of the above assertion.

Orders by mail, as well as those given in person, promptly executed and forwarded. Parties sending orders by letter are particularly requested to WRITE PLAINLY, and give THE EXACT SPACE THEY WISH THE LETTERS TO OCCUPY.

By close application and superior execution of work during an experience of thirteen years, MR. TRUWORTHY has extended his business to its present proportions. His facilities for rapid and tasteful execution of all work in his line are now far superior to those of any other in this State or in the Union.

Having purchased all the late John Hall's Stencil Tools, Plates and Impressions, and everything pertaining to his business, I am prepared to furnish customers with *fac similes* of his work.

☞ Ink, Brushes and Marking Pots for sale.

C. W. TABER. Z. H. CUNNINGHAM.

TABER & CUNNINGHAM,

BLACKSMITHS,

CARRIAGE AND WAGON MAKERS

JOBBING OF EVERY DESCRIPTION EXECUTED WITH DISPATCH IN A WORKMANLIKE MANNER.

No. 656 Howard Street, near Third,

SAN FRANCISCO.

D. F. HUTCHINGS. J. R. FINLAYSON.

HUTCHINGS & FINLAYSON,

Successors to C. H. HARRISON,

PHŒNIX OIL WORKS

ESTABLISHED 1850,

Store and Manufactory, 517 Front Street,

Between Washington and Jackson,

Manufacturers of and Dealers in

Land, Sperm, Pinnacle, Elephant, Polar, Linseed, Lubricating

AND OTHER OILS.

EVERY ARTICLE WARRANTED.

EUREKA

WROUGHT IRON WORKS,

317 & 319 HOWARD STREET.

Railings, Lintels, Stairs, Bolts, Vaults, Anchors,

Bedsteads, Doors, Locks, Safes, Patent Wheelbarrows, Beams.

WM. McKIBBIN.

California Assay Office,

No. 512 California Street,

One door west of Montgomery, SAN FRANCISCO.

J. A. Mars, Assayer.

ANALYSIS OF ORES, MINERAL WATERS, ETC.

"Onward" is the Motto of the Progressive Spirit of the Age.

PACIFIC POTTERY,

Corner 31st and J Streets, Sacramento.

N. CLARK & CO.

Would respectfully call the attention of Gardeners, Orchardists, Grape Growers and Farmers to their new

UNDERGROUND IRRIGATION PIPE.

This new method of Irrigation can be seen in successful operation in the grounds adjoining our works. One superiority of underground irrigation is plainly to be seen. With less than one-half of the water used in top irrigation, it produces *twice* the amount of crop. We manufacture and keep a good supply of Earthen and Stone Ware, Jars, Butter Pots, Flower and Bean Pots, Jugs, etc. A specialty is made of Vitrified Iron Stone Water and Sewerage Pipe; size, from 2 to 12 inches. Also, Drain and Land Tile.

Depot at No. 3 California Street, San Francisco.

J. B. OWENS, Agent.

See Report of Committee on Class 15.

HUCKS & LAMBERT'S

Unrivalled Home-Manufactured

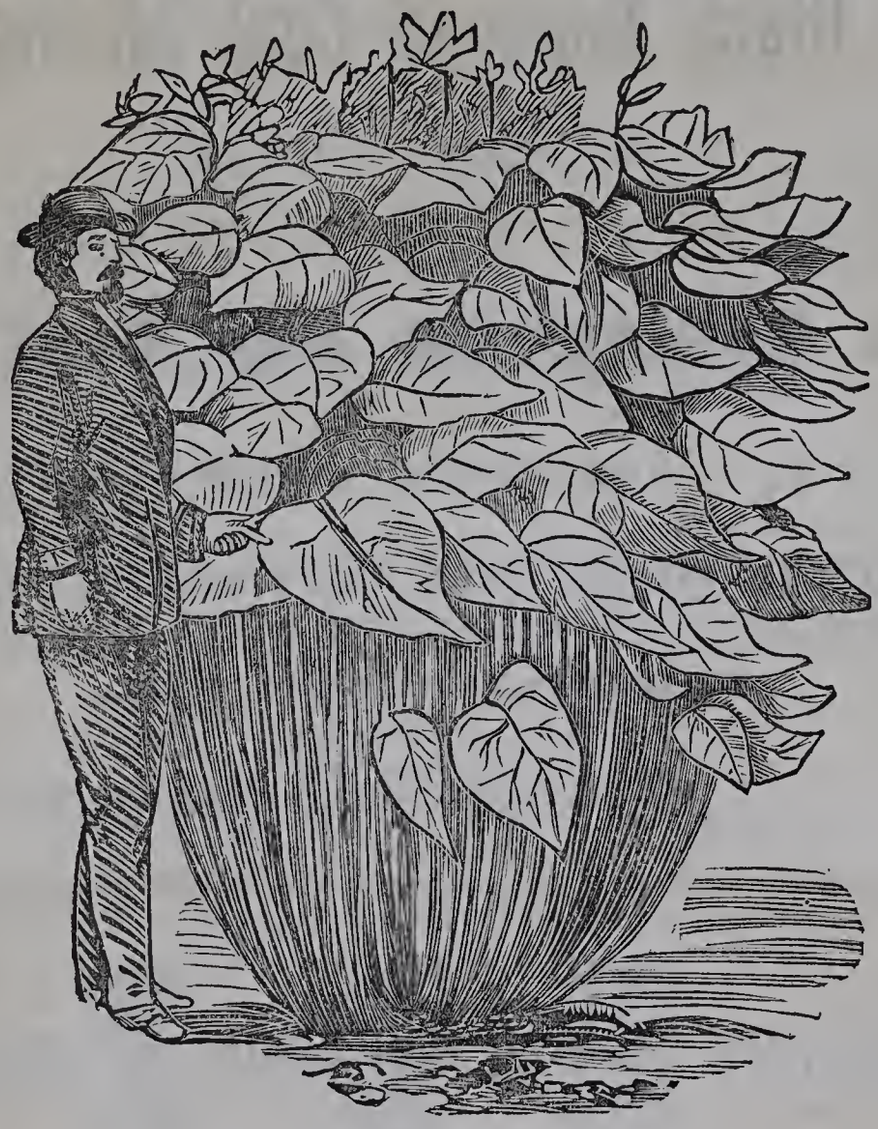
H. & L. Axle Grease,

ESTABLISHED IN 1853.

MANUFACTORY, 145 NATOMA ST.

Depot, No. 320 Jackson Street, San Francisco.

RAMIE! RAMIE!! RAMIE!!!



The Most Sure and Profitable Crop that our Farmers can raise.

WILL YIELD FROM $100 TO $300 PROFIT PER ACRE PER YEAR.

☞ Full information furnished as to best method of cultivating the plant, etc., and cuttings for sale by

THE PACIFIC RAMIE COMPANY,

P. O. Box 1539, San Francisco,

Or J. S. FINCH, Haywards, Alameda County, Cal.

JAMES MACKEN,

COPPERSMITH,

226 Fremont Street, bet. Howard and Folsom.

All kinds of COPPER WORK done to order in the best manner.

Particular attention paid to Steamboat, Sugar House and Distillery Work.

REPAIRING PROMPTLY AND NEATLY ATTENDED TO.

The Black Diamond Coal Mining Co.

(STEAM COAL,)

AND

The Bellingham Bay Coal Co.

(A superior Coal for Domestic Use,)

Corner Spear and Harrison Streets,

SAN FRANCISCO, CAL.

B. P. CORNWALL, Secretary and Agent.

Pioneer Kid Glove Factory,

42, 44 and 46 THIRD ST.

THE MOST DURABLE GLOVES,

MADE OF KID, DOG AND DEER SKINS

FOR WEAR AND COMFORT.

THIS SAME SURPASSES ANYTHING NOW MADE OR IMPORTED.

WHOLESALE AND RETAIL BY

D. SAMUELS.

GOAT AND DEER SKINS BOUGHT.

C. E. Watkins,

YOSEMITE ART GALLERY,

22 & 26 Montgomery Street,

OPPOSITE LICK HOUSE ENTRANCE, SAN FRANCISCO.

PORTRAIT & LANDSCAPE PHOTOGRAPHS

Work of the finest quality only will be sent from this Gallery.

Pictures colored in Crayon, Water or Oil, by the Best Artists.

OUR COLLECTION OF

PHOTOGRAPHIC VIEWS,

Comprising Large and Medium, for Portfolios and Frames, and Stereoscopic, is the largest and best in the United States, if not in the World—securing for us the only Medal awarded by the Paris Exposition, and the only Medal awarded by the Mechanics' Institute of San Francisco, for Landscape Photography in California.

We cordially invite all to spend a leisure hour or two in examining our collection, and thereby visiting the wonders and beauties of Yosemite, the Mammoth Grove, Geysers, Pacific Railroad, Columbia River, and all other places of interest on the Pacific Coast.

STEREOSCOPIC VIEWS, $1.50 PER DOZEN.

W. K. DIETRICH,

PORK PACKER

517 & 519 Washington Street,

And Stalls Nos. 54 and 55 Washington Market.

EXTRA SUGAR-CURED HAMS, SMOKED BEEF AND TONGUE.

Breakfast Bacon, Clear Pork, Lard, etc.

SOUSED PIGS' FEET IN FIFTY POUND PACKAGES.

ALL MEATS PACKED AND DELIVERED DIRECT FROM THE SMOKE-HOUSE.

Dietrich's Eagle Brand of Hams, put up in Canvass, are equal to Eastern

BEST BRAND OF EASTERN HAMS IN LOTS TO SUIT.

R. LEHMAN & CO.

(Successors to C. BORCHARD,)

WHOLESALE CONFECTIONERS,

No. 413 DAVIS STREET,

RETWEEN WASHINGTON AND JACKSON, SAN FRANCISCO.

Diploma Awarded at the Eighth Industrial Exhibition, 1871.

Manufactures all kinds of Candies from the best materials, and will sell at least as low as any other house in the Trade.

GOODS WARRANTED TO KEEP IN ANY CLIMATE

COUNTRY ORDERS PROMPTLY ATTENDED TO.

Dealers Supplied on Liberal Terms.

J. H. CLARK. J. H. FOOTE.

BOSTON

CRACKER BAKERY,

Wholesale and Retail,

36 Geary Street, between Kearny and Dupont,

SAN FRANCISCO.

COUNTRY ORDERS SOLICITED.

Fr. H. ROSENBAUM & CO.

IMPORTERS OF AND DEALERS IN

FRENCH PLATE, PATENT BACK MIRRORS,

CHANCE'S CRYSTAL SHEET

And Window Glass,

GERMAN LOOKING-GLASSES, ETC.

Sole Agents for

Nyssen's Patent Back Mirror Plates,

567 Market Street, opp. Sansome, San Francisco.

Diploma Awarded for Largest Mirror, by Mechanics' Institute Exhibition, 1871.

JOB M. SEAMANS,

MANUFACTURING

Jeweler and Watchmaker,

AND DEALER IN

WATCHES, CLOCKS, DIAMONDS, ETC.

Repairing of every description neatly executed and warranted.

No. 311 MONTGOMERY STREET,

San Francisco.

THE

Stetefeldt Furnace

For Treating Ores requiring a Chlorodizing Roasting.

"It is one of the most important steps of progress ever yet achieved in our American Metallurgy."—U. S. Commissioner Raymond.

"The Stetefeldt Furnace is of vital importance, especially for poor ores requiring roasting."—Kustel.

SIMPLE, THOROUGH, PERFECT.

Chlorodizes almost Instantaneously.

Gives the Highest Percentage of Silver.

SAVES LABOR AND FUEL.

This admirable Furnace is now in use in the chief Mining Districts in Nevada, at Austin, Pioche, Mineral Hill, White Pine, Belmont, Pinto, Mammoth, and its success is uniform and established.

OFFICE OF THE

STETEFELDT FURNACE,

No. 411½ California St., San Francisco.

B. J. BURNS, Agent.

PACIFIC

WOOD PRESERVING COMPANY.

Awarded Gold Medal by the Mechanics' Institute, 1871.

Awarded Special Medal by State Agricultural Society, 1871.

ENDORSED BY THE LEADING SCIENTIFIC AND PRACTICAL MEN OF THE PACIFIC COAST, AS WELL AS OF THE EASTERN STATES.

See Report Harbor Commissioners, Special Committee Board of Supervisors, etc.

We preserve Wood by the vapors of Hydro-Carbon Oils against shrinkage, swelling, wet and dry rot, the attacks of rodent animals, and all destructive or disagreeable insects.

Our Preserved Wood is especially adapted for Bridges, Wharves, for the Planking of Streets, and the Construction of Sidewalks, Cellar Floors and Bulkheads, also for Granaries, Farm Wagons and Farm Implements.

Wood preserved by us for Pavements will not shrink, swell nor bulge, and the annual wear on the surface of the blocks does not exceed one-eighth of an inch. Such wood pavements would be cheaper for the tax-payers and property owners at $3.00 per square yard than cobblestone pavements as a free gift.

It can be demonstrated that the money value of the horses, horse shoes and vehicles destroyed by the use of cobble pavements, is enormous.

The tax-payers of San Francisco pay more for the repairs of the best cobble pavement than for repairing inferior wood pavements.

The "TEREDO NAVALIS" or Marine Worm will not attack piles preserved by us.

OFFICE OF THE COMPANY,

No. 338 Montgomery Street, Rooms 3 and 4.

WORKS SITUATED ON BERRY ST., NEAR FOURTH,

Open to the inspection of the public at all times.

I. C. WOODS, Manager.

San Francisco, December, 1871.

DEWEY & CO.'S

Scientific Press,

U. S. AND FOREIGN PATENT AGENCY.

Established in San Francisco in 1860, and now the principal Agency on this side of the continent. Honest, confidential and reliable advice given. Patents secured in less time and at more favorable rates for Pacific Coast inventors, than by any other Agency in the United States.

The Scientific Press,

DEVOTED TO

Mining, Mechanic Arts and Inventions,

Is the largest and most practical Mining Journal in the United States. Contains illustrations and descriptions of all new methods of Mining, and working and saving the Precious Metals. $4.00 a year.

It is one of the Largest, best Illustrated and most Original and Enterprising Agricultural Journals in America, and has no rival on the western side of the continent. Its circulation is rapidly increasing, and it is very popular with its patrons.

A NEW HUSBANDRY,

as it were, is required on the Pacific Coast, on account of its peculiar seasons, soil, climate and topography. The new discoveries, ideas, and useful hints evolved in its rapid progress, are to be observed with interest, and read, as reported in the PACIFIC RURAL, with profit by practical and progressive agriculturists everywhere. Sample copies of the PRESS, post paid, 10 cts. Subscription, $4.00 a year.

All Libraries should be supplied with Bound Volumes of these Special Journals.

ALL VALUABLE INVENTIONS patented through our Agency are either illustrated or liberally mentioned, according to merit, in the above journals.

Send for our free Illustrated Patent Circular. Newspaper samples, post paid, 10 cents.

DEWEY & CO.,

PUBLISHERS, PATENT AGENTS AND ENGRAVERS,

No. 338 Montgomery St., cor. California, S. F.

F. GRACIER.

J. B. JOHNSON.

GRACIER & JOHNSON,

MANUFACTURERS OF

Agricultural, Grist Mill and Wood Working Machinery,

HAT AND BONNET BLOCK AND PATTERN MAKERS,

SHIP AND COPPER WORK, PLANING, RUSTIC AND FLOORING,

Johnson's Patent Friction Premium Hoist.

Job Sawing and Turning done with dispatch.

BUNGS, DECK PLUGS, BROOM HANDLES,

Rosewood and Common Faucets,

CURTAIN RODS AND SLATS,

Patent Clothes Frames,

SHIP WHEELS, TRENAILS, CUT WEDGES,

Etc., Etc., Etc.

ORDERS SOLICITED AND PROMPTLY ATTENDED TO.

The cut on next page represents a recently improved Gang Plow. The following are some of its superior advantages:

1st.—An improved method of mounting the drivers' seat, so that it is supported directly from the axle.

2d.—A novel combination and arrangement of levers for elevating and depressing the plows and their frame.

3d.—An adjusting gear, by which the plows are moved to and from land, also to plow on the hillsides, or in a circle, while the team walks in furrow. The different parts of the plow can be adjusted so as to work with equal facility while plowing at any depth, or on any kind of soil. The levers or regulators can be adjusted with the foot by the driver.

S. E. corner Mission and Beale Sts., S. F.

Haine's Improved Gang Plow, Patented Nov., 1871.

GRACIER & JOHNSON, Sole Manufacturers,

S. E. corner Mission and Beale Streets, S. F.

City Paving Company,

OFFICE, No. 619 MONTGOMERY ST.

Mill, Corner of Fourth and Berry Streets.

This Company contracts for Street Paving of every kind, which is accepted by the city authorities of San Francisco, but makes a specialty of paving under the patent known as the "STOW FOUNDATION PATENT," which they claim as the best known wooden pavement. In proof of this assumption they are prepared to exhibit certificates from the most celebrated engineers in several of the largest cities of the Union where this style of pavement has been introduced.

The great superiority of this pavement over all others lies in its mechanical construction, and not in the materials used. Experience has clearly demonstrated in this city, which material can be safely used, and which should be rejected. All objections which have yet been urged to the Stow Foundation Pavement attach to the quality of lumber used, and not to the construction of the work. The following extract from the report of the Committee on Pavements at the last Industrial Exhibition in this city speaks for itself: to wit:

"For general practical use and public benefit, we do not hesitate to pronounce the Stow Foundation Pavement, exhibited by the City Paving Company, together with the actual tests of its durability, as presented by the wear and tear in the streets of San Francisco, to be superior to all others, when taking into consideration the method of laying it, the time it has been laid, the form of its construction, and by an honest comparison with others which have been submitted to the same test. We award to it the First Premium."

[SIGNED] EDWIN A. SHERMAN,
JOHN V. HUNTER,
Committee.

Certificates showing the superiority of the Stow Foundation Pavement over all others ever introduced into this city, were furnished to the City Paving Company by his Honor, Frank McCoppin, and the entire Board of Supervisors during his last term of office, and by his successor, the Hon. Thos. H. Selby, and eleven out of twelve of the Supervisors during his term of office; and though some objections have latterly been urged to this Pavement, it is plainly manifest to anyone who will investigate the subject, that the fault lies entirely with the quality of materials used, *when objections lie at all.* To no sample of this Pavement, laid with "Black Heart Redwood," has there been a word of objection yet raised, and it is proposed to use this quality of lumber in future, unless the property holders, by express petition, request otherwise.

The fact is not generally known, but it is a truth nevertheless, that the objections so often urged to wooden block pavements, because of their swelling and bursting up in humps, apply to the pavement laid under the Nicolson Patent, all of which, however, would have been remedied by a moderate expenditure in sprinkling the streets during the long dry season; the fact having been clearly demonstrated that no defects of this kind have shown themselves upon streets which have been sprinkled, as for example, Kearny street and Montgomery street. The damage does not arise from the swelling of the blocks themselves, but by the foreign substance which is held between the shrunken blocks when they swell to their original size.

PHILIP CADUC,
General Supt. City Paving Co.

WESTLEY'S AUTOMATON OR UNIVERSAL CHAIR, AS AN EASY CHAIR, RECLINING CHAIR, ROCKING CHAIR, LOUNGE, COUCH OR BED, is simply PERFECT AND COMPLETE.

As a PHYSICIAN'S CHAIR, it has no rival. In a doctor's office it would seem to be absolutely indispensable, when its perfect adaptation to the requirements of such a place is appreciated.

As a DENTIST CHAIR it has many points of excellence; and in a BARBER'S SALOON it is superb; but it is

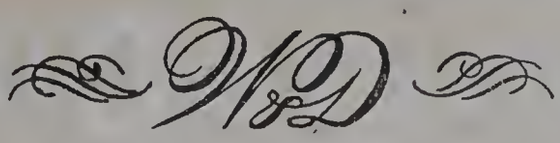
As an INVALID'S OR CONVALESCENT'S CHAIR, that it is incomparable, while the joints and different members (patterned after the mechanism of the human frame) move easily and surely to perform the various changes of which the chair is capable; they are so constructed that the upholstering material covers them, as the natural covering clothes and softens the human form, leaving no angles, ridges or hardness to complain of, making it the easiest and softest chair imaginable, much more comfortable than it is possible to upholster any adjustable or reclining chair ever before introduced. The many changes this chair is capable of, and the various positions it assumes, permitting any portion of the body (of the occupant) to remain, with muscles relaxed, at rest undisturbed, in any desired position, while other portions of the body are being changed from one position to another, raised, lowered or supported at will, make it, indeed, a place of "rest for the weary."

A PARLOR CRIB, "for our darling," the easiest, most secure and comfortable place for little folks ever seen, is one of the many uses to which the UNIVERSAL CHAIR can be turned.

WESTLEY'S IMPROVED SOFA BED, "THE GEM," is a wonder of elegance, comfort, convenience and economy. It received the Premium at the Eighth Industrial Exhibition of the Mechanics' Institute, San Francisco, 1871, and is much admired by all who have seen it. Orders are received for it from the best houses in the city, daily.

"THE GEM," as a sofa, made to match suits or sets of furniture, (if desired,) or in as many different styles as there are tastes to please, is suitable for parlor, boudoir, library or office, and stands unexcelled in appearance, usefulness or ease in the place it is made to fill, with nothing in its appearance to indicate that it is anything more than a handsome sofa in good style.

In "THE GEM" as a bed every resemblance to the sofa disappears, and in its place we have a handsome and luxurious couch, four feet wide, (more or less, if desired,) soft and elastic throughout its entire length and breadth, with elegant roll pillows extending (all the way) across one end, graceful in outline and perfect in detail, a perfect gem is "THE GEM SOFA BED."



No. 143 Fourth Street, San Francisco.

(Continued.)

WESTLEY'S "MAGIC DIVAN" received a Premium at the Fair of the Mechanics' Institute, San Francisco, in 1869. Since then it has been much improved.

As a SOFA, it is cheap, comfortable, convenient, strong and substantial, neat in appearance, and gives no idea that it can be converted into any other piece of furniture.

As a BED, it is unsurpassed for comfort, without any indication of the sofa into which it can be turned. A simple but novel hinge at each end turns the back over, so as to add the height (of the back) to the width of the seat on the front side, keeping the upholstered side always uppermost, and thus instantly converting it from a convenient sofa to a luxurious couch, without moving the sofa from its position. As no latches, hooks, stops or fastenings of any kind are necessary, a child three years old can make the change.

On Steamers, in Ships' Cabins, Hotels, Offices, Sitting-rooms, and every place where an elegant, easy seat or luxurious couch is needed, it is just the thing.

Westley's Improved Spring Bed, "THE PACIFIC BED BOTTOM," received Premium over all competitors at the Seventh Industrial Exhibition of the Mechanics' Institute, San Francisco, 1869.

It is the best and cheapest, strongest, lightest and neatest thing of the kind ever made. The slats, in these bed-bottoms, are VERY ELASTIC, but owing to the arrangement of the springs which support them, at points nearly one-fourth their length from the end, they never sag down, but rather CROWN at the middle, giving to the bed a handsome, full appearance, while the oscillating stirrup at the end of the vibrating spring imparts to the bed a degree of ease and comfort never before attained.

THE PACIFIC SPRING BED-BOTTOMS, as furnished, fit any sized bedstead; can be put in or removed in one minute's time; pack in small space, and are easily transported from place to place, and though they are so very light that a child can move them from room to room, yet they are so strong and firmly made that they never get out of order, and will last, in constant use, without repairs, for generations. They are the delight of HOTEL AND BOARDING-HOUSE KEEPERS, (on account of their cheapness, cleanliness and convenience,) as well as their PATRONS, on account of the ease and comfort they afford.

WESTLEY'S INDEPENDENT COMPENSATING SPIRAL SPRING. This newly invented spring for upholstering purposes is a great improvement on the ordinary spiral spring, which it must necessarily soon supersede entirely. It is fully as elastic ; it will sustain a much greater weight without injury; in fact, owing to the compensating coil and the peculiar shape of these springs, no weight that can be placed upon them can injure or overstrain them, consequently they never "play out." They are lighter, and consequently cheaper than the ordinary spiral springs ; they occupy less space in depth, therefore they can be used to great advantage where there is not room for the ordinary spring; they are self-sustaining, and need no tying, nailing or clamping, which is a great saving in time. A number of these springs, sufficient for a first-class bed, can be firmly and securely set, and removed or replaced in less than ten minute's time, as neither tacks or twine is needed; the only tool necessary is a brad awl. With these springs, everyone can be their own upholsterers, and the miner in the mountain wilderness, having provided himself with a small bundle of these springs, (galvanized, so as not to rust,) weighing, say, 7½ pounds, at a cost of about $2.00, by the use of hatchet and brad awl, can in a few minutes make for himself a superior spring bed. All upholsterers will readily see how superior the INDEPENDENT COMPENSATING SPRING is for spring edge work; as it requires no tying, it needs no riser.

FRANCIS & VALENTINE,

Printers, Engravers and Bookbinders,

The Largest Printing Establishment on the Pacific Slope.

Mercantile and Show Work

Done in the best style and at lowest rates.

517 Clay St.—510 to 516 Commercial St.

SAN FRANCISCO.

Wm. M. Betts & Brother,

S. F. CARRIAGE SPRING WORKS,

218 FREMONT STREET,

Between Howard and Folsom, SAN FRANCISCO.

Locomotive, Car, & all kinds of Carriage & Wagon Springs

MADE TO ORDER AND WARRANTED.

☞ A Gold Medal was awarded to Wm. M. Betts & Bro. by the Mechanics' Institute Exhibition of 1871, for their superior Carriage and Wagon Springs.

W. T. GARRATT. JAMES HILLMAN. WM. T. LITTLE.

W. T. GARRATT & CO'S
BRASS & BELL FOUNDRY

CORNER FREMONT AND NATOMA STS.,

SAN FRANCISCO.

Manufacturers of
Church and Steamboat
Bells and Gongs,
Brass Castings of all
Kinds,
Fire Engines,
Force and Lift Pumps,
Hose Couplings.

Babbit Metal,
Water Gauges and Glass
Tubes for Steam Boilers,
Steam Gauges,
Magnetic Gauges,
Steam Clocks and Valves
of all descriptions,
Steam Whistles.

Hydraulic Pipes and Nozzles for Mining Purposes.

IRON PIPE FURNISHED WITH FITTINGS.

☞ Garratt's Improved Journal Metal.

Occidental Foundry,

(Formerly Vulcan Foundry,)

137 & 139 FIRST STREET,

Near the Gas Works, SAN FRANCISCO.

STEIGER & BOLAND,

Iron Founders.

IRON CASTINGS OF ALL DESCRIPTIONS AT SHORT NOTICE.

☞ NOTICE.—Particular attention paid to making Superior Shoes and Dies. Orders from the country solicited and prompt attention given.

THE

State Investment and Insurance Co.

FIRE AND MARINE,

ARE NOW PREPARED TO ISSUE POLICIES ON ALL KINDS OF

First-Class Risks, both Fire and Marine.

Principal Office, No. 409 California Street,

OPPOSITE THE BANK OF CALIFORNIA.

OFFICERS:

TYLER CURTIS, - - - - - - - - - President.
THOS. N. CAZNEAU, - - - - - - - - Marine Director.
CHAS. H. CUSHING, - - - - - - - - Secretary.

Board of Directors:

TYLER CURTIS,
A. J. BRYANT,
C. D. O'SULLIVAN,
JOHN H. SAUNDERS,
JOHN MIDDLETON,
A. H. RUTHERFORD,
JOHN ROSENFELD,
JOHN J. MARKS.
FRANK M. PIXLEY,
PETER DONAHUE,
E. BURKE,
J. W. NYE,
HUGH WHITTELL,
ALEXANDER AUSTIN,
THOS. N. CAZNEAU.

Mechanics' Institute,

ENTRANCE,

No. 27 Post Street, bet. Kearny and Montgomery,

SAN FRANCISCO.

The Library of Reference, the Library, Reading Room and Chess Room are open from 8 A. M. until 10 P. M. every day, (except Sundays and Legal Holidays).

The Society possesses a Library of 18,000 volumes—the most valuable technical and scientific library on the Coast, embracing the transactions of the leading Scientific Societies of the United States and Europe, (among which are the philosophical transactions of the Royal Society of Great Britain, complete), and the standard, scientific and technical works; and is in immediate receipt of all new standard publications.

The Reading Room is supplied with the current periodicals and newspapers of the day.

The Mechanics' Institute is open to all, and the Trustees will be pleased to have visitors and others inspect the rooms.

Entrance Fee, $1.00. Quarterly Dues, (in advance), $1.50. Life Membership, $50.

BRITTAN, HOLBROOK & CO.,

IMPORTERS OF

Stoves and Metals,

TINNERS' STOCK, TOOLS & MACHINES

General House Furnishing Hardware, etc.

111 & 113 California, and 17 & 19 Davis Sts.,

San Francisco, Cal.

176 & 178 J STREET, SACRAMENTO, CAL.

C. HOLBROOK, A. D. McDONALD, J. F. MERRILL, } S. F.

J. W. BRITTAN, C. MERRILL, } N. Y.

MARDEN & MYRICK,

MANUFACTURERS AND

Wholesale and Retail Dealers in

Coffee, Spices, etc.

First Premium awarded at Mechanics' Institute Exhibition of 1868.
First Premium awarded at Mechanics' Institute Exhibition of 1869.
First Premium awarded at Mechanics' Institute Exhibition of 1871.

Country orders solicited and promptly filled.

CALIFORNIA

Billiard Table Manufactory,

OFFICE, WAREROOMS AND SHOWROOMS,

563 MARKET STREET.

Factory, corner Sixteenth and DeHaro Sts.

JACOB STRAHLE. F. DE ST. GERMAIN.

JACOB STRAHLE & CO.,

FIRST PREMIUM 1871,

BILLIARD TABLE AND FANCY FURNITURE MAKERS,

Sole Agents for Pacific States for

DELANEY'S PATENT WIRE CUSHIONS,

WHOLESALE AND RETAIL DEALERS IN

CALIFORNIA & FOREIGN FANCY WOODS,

563 Market Street, opp. Sansome, San Francisco.

EDITORS AND PUBLISHERS OF THE "BILLIARD ECHO."

A large assortment of the BEST BILLIARD TABLES with all the MODERN IMPROVEMENTS; also, BILLIARD TRIMMINGS, etc.

Orders Filled Promptly. Send for Price List. P. O. Box 1989.

LOCKE & MONTAGUE,

IMPORTERS OF

STOVES,

TIN PLATES AND SHEET IRON,

MANUFACTURERS OF

Plain, Stamped and Planished Tinware,

AND DEALERS IN

TINNERS' TOOLS AND MACHINES

And House Furnishing Hardware,

112 & 114 BATTERY ST., S. F.

DATE DUE

REF
606
M48r
8th
1871
Lockcase

Mechanics' Institute Library
3 1750 03313 4548

REF
606
M48r
8th
1871

Mechanics' Institut
(San Francisco,
Calif.)
Report of the
Industrial Exhibiti

Archives

HALLET, DAVIS & CO.'S

PIANOS

Have received the First Premium and only Medal awarded for the best eastern made Pianos at the late Mechanics' Fair in this city.

Our Pianos are with New Scales and Modern Improvements,

And our constant aim will be to perfect the Instrument in every part, and to make our house worthy the patronage of an appreciative public, whose favors in the past we gratefully acknowledge, and respectfully solicit their continuance.

Second-hand Pianos taken in Exchange for New.

A LIBERAL DISCOUNT MADE TO CLERGYMEN, SCHOOLS, &c.

WM. G. BADGER, Sole Agent for this Coast.

ALSO SOLE AGENT FOR

GEO. WOODS & CO.'S PARLOR AND VESTRY ORGANS,

THE FINEST IN THE WORLD.

WAREROOMS, No. 7 SANSOME ST., SAN FRANCISCO.

GRAND TRIUMPH OF THE

WEBER PIANOFORTE.

First Premium received for the WEBER GRAND PIANO, over the Chickering, Hallet, Davis & Co's, and all other competitors at the Mechanics' Fair of 1871.

These magnificent Instruments are now attracting more attention, and meeting with larger sales in eastern cities than any other Piano made.

SHERMAN & HYDE, Sole Agents for Pacific Coast,

Corner Kearny and Sutter Streets, S. F.

ALSO AGENTS FOR

SMITH'S AMERICAN ORGANS.

A LARGE AND COMPLETE STOCK OF

Sheet Music and Musical Merchandise of every description

CONSTANTLY ON HAND.